

**Time, Trade, and Identity: Bone and Antler Combs in  
Northern Britain c. AD 700-1400**

**Volume 1 of 2: The Text**

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## Abstract

Bone and antler hair combs are one of the most frequently recovered classes of artefact from late Roman to medieval sites in the British Isles. Nonetheless, their potential remains to be fulfilled. In Scandinavia, combs have been used to understand the nature of 'urban' craft and industry, but similar work has yet to be accomplished in the British Isles. This may be because of a paucity of large collections for individual sites, and this thesis hopes to address this problem through the synthesis of a large body of data from across northern England and Scotland.

Moreover, while much has been written on the potential of combs in the understanding of trade and 'industry', their role as meaningful objects has not yet been fully explored. Combs appear to have held a significance beyond that related to their functional use, and they may have been worn as visible dress accessories, such that they had an important role in communication.

The period between c. AD 700 and 1400 was one of considerable political, cultural, and economic change, creating a context in which combs may have been used in the active construction, display, and maintenance of identity. Thus, patterning in raw materials, form, ornament, manufacturing methods, quality of manufacture, and use wear are culturally important. The application of new methods (including the identification of antler combs to species level), and the detailed survey of combs from across northern Britain thus elucidates a number of issues, including the importance of regionality in social identity through time, the chronology and nature of contact between the British Isles and Scandinavia, and the changing political and cultural environment of the medieval period.

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# Chapter 1: Introduction

## 1.1 The Archaeological Significance of Combs

This thesis is a study of identity and culture contact in diachronic perspective. It focuses on northern Britain between c. AD 700 and 1400, and takes as its medium the bone/antler hair comb; one of the period's most frequently recovered artefacts. Despite their ubiquity, the hair combs of the British Isles have rarely been the subject of close analysis or detailed synthesis (though see Dunlevy 1988; MacGregor *et al.* 1999). This is in marked contrast to their treatment elsewhere in Europe (*e.g.* Winter 1907; Thomas 1960; Tempel 1969; Ulbricht 1980; Christophersen 1980; Ambrosiani 1981; Flodin 1989; Luik 1998; Smirnova 2005), though even in these cases the focus has tended to be on the construction of classifications or understanding the manufacturing process. The uses of combs, particularly their role in the construction of identity, remain relatively unexplored. This thesis seeks to redress the balance, by considering the social use of combs, and their operation in the expression of identity in the dynamic times from the pre-Viking period to the Middle Ages.

If there is little precedent for the study of the use of combs in communication, a lead may be taken from studies of other forms of portable material culture. Grave goods are well studied in this respect, both in Early Anglo-Saxon (Shepherd 1979; Pader 1982; Geake 1997; Williams 2004) and Viking Age (Gräslund 2001; Harrison 2001; Paterson 2001; Hadley 2002) contexts. In recent years, the institution of the Portable Antiquities Scheme and other collaborations between archaeologists and metal detectorists (*e.g.* Richards 1999a; Naylor and Richards 2005) have led to improvements in the recording of decorative metalwork. This has led not only to more consistent recognition of sites, and a clearer understanding of their character (Richards 1999b, 2003; Ulmschneider 2000, Naylor 2004), but has fostered some reinterpretation of the finds themselves. The large numbers of finds identified through such cooperation have allowed broad, typological reviews to be produced (*e.g.* Williams 1997), but have also facilitated more theoretically nuanced studies. In particular, there are a number of discussions of the uses of jewellery in the negotiation of identity in Viking Age England (*e.g.* Thomas 2000; Paterson 2001; Owen 2001).

Theoretically-informed studies of the Middle Ages have more often been concerned with power, status, gender or occupational identity than ethnicity, and have frequently focused on buildings, rather than portable artefacts, as the medium of study (*e.g.* Gilchrist 1995, 1997; Giles 2000). Nonetheless, David Hinton's (2005) study of the changing roles of artefacts in the construction of identity is worthy of note.

However, decorative metalwork has a rather patchy distribution in the British Isles, and is particularly scarce in Atlantic Scotland. The result is that comparisons between English and Scottish collections have rarely been attempted (though see Lewis-Simpson 2005). In contrast, bone and antler objects - of which combs are among the most frequently represented classes of artefacts - are common in both Atlantic Scotland and northern England, and the potential for meaningful comparison is correspondingly greater.

Hair combs thus offer considerable potential for the investigation of patterning in time and space. Moreover, when compared to long-lived, evolving expressions of identity such as longhouse architecture, they seem more likely to provide high-resolution data. Their use as a hygiene implement, coupled with their low economic value - relative to that of ornamental metalwork - renders them unlikely to be used as heirlooms (Ambrosiani 1981: 15). This means that they are likely to relate to discrete units of time, and where styles were sufficiently diagnostic, they are of considerable utility as dating tools.

On a more esoteric level, there is the possibility that combs held a variety of meanings beyond the simply practical or hygienic (Ashby in prep.). The use of exotic materials such as ivory may have conferred a certain status upon some combs, while beliefs surrounding deer and antler may even have conditioned attitudes to combs in general (Buckland 1980; Meaney 1981; Hultkrantz 1985; Bath 1992; Green 1992; Hicks 1993). Moreover, the complex, protracted process of manufacture (see Galloway and Newcomer 1981), together with the elaborate decoration and large size of some combs, and the repair - rather than replacement - of damaged items, is suggestive that some examples, at least, had a more symbolic significance. As such, their deliberate, 'ritual' deposition is of note. In various Scottish contexts they have been found in building 'foundation' or 'sealing' deposits (see Chapter 8). Furthermore, in Early Anglo-Saxon graves, miniature, non-functional combs

are known, while more practical examples are frequently interred *unburnt* with cremated remains (Williams 2003). In the furnished burials of the Viking Age they may be found clasped between the hands of the deceased, or in the pelvic region, as if once suspended from a belt (Owen and Dalland 1999a; Welander *et al.* 1987). Indeed, a role as a dress accessory seems quite likely; some handled combs feature ornament on only one face, which would fit well with such a purpose (*e.g.* MacGregor *et al.* 1999: 1938).

Moreover, anthropological, sociological, and ethnohistoric data are suggestive of a variety of contexts in which combs may have held special significance. Based upon ethnohistoric analogy (*e.g.* Sherley-Price 1990: 125; Sorrell 1996), there are suggestions that combs made of exotic materials played a role in gift exchange, while their frequency as carvings on Pictish symbol stones is remarkable (Foster 1990: 162-165). In the medieval period, when one might assume that there was a movement towards the functional, combs may have been used in the display of Christian (Tesch 1987: fig. 8; Smirnova 2005: 244) and even mercantile (Clarke and Heald 2002) identity. Grooming seems to have had particular associations and connotations of intimacy and personal relationships (*e.g.* Jones and Jones 1949: 116-119, 134-135; see Ashby in prep.), while hair itself may have held symbolic meaning. As well as having possible, if somewhat elusive, links with morality, magic and shamanism, hair was bound up with aspects of identity including age, status, gender, religion, ethnicity, and group membership, and there may well have been perceived 'rules' about appropriate ways for different people to wear their hair (*e.g.* Hall 1654; Frazer 1913; Berg 1951; Leach 1958; Smyser 1965; Douglas 1966; Hallpike 1969, 1979; Derrett 1973; Hershman 1974; Obeyesekere 1981; Ribeiro 1986; Bartlett 1994; Hildebeitel 1998; Miller 1998; Pohl 1998; Singh 1998; Winstead 2003). In this regard, one is particularly drawn to Alcuin's comments regarding the English temptation to mimic Scandinavian hairstyles (Allott 1974), and Harald Fairhair's oath to never 'clip nor comb' his hair until he had achieved his political goals (Hollander 1995: 61-62). Though it is difficult to extrapolate meaning from art into everyday life, and the latter example is a high medieval tradition rather than a contemporary ninth-century reference, these examples do at least serve to demonstrate the potential for combs to be used in display and signalling. There are thus several reasons to believe that combs may have played an important role in communication.

## 1.2 Cultural Background

The nature of culture contact in the British Isles has been a common concern in many recent studies of the Viking Age. In England, though toponymic evidence has been taken as suggestive of a mass migration from Scandinavia, with the extent of settlement apparently clearly mapped (see Stenton 1943; papers in Sawyer 1976), the archaeological evidence is less emphatic. Indeed, Hadley (1997) and Richards (2000, 2001a, 2001b, 2002) have demonstrated that Scandinavian settlers rapidly assimilated into a new 'Anglo-Scandinavian' identity, effectively rendering Scandinavian settlements archaeologically 'invisible'. These patterns may be reconciled through a critical consideration of the evidence (see Barrett 2003a, forthcoming-a), but an analysis of the comb corpus has the potential to illuminate the debate.

In Atlantic Scotland, the situation is yet more variable, with the material culture of the Northern Isles rapidly becoming effectively 'Norse', while the west shows more evidence of continuity. The situation is complex, and, superficially at least, there is disagreement between archaeological, toponymic, historical, and genetic evidence (Barrett 2003a, Barrett forthcoming-a). Regional patterning surely has its basis in disparities in population density, politics, economics, and local tradition. Such complexity would conceivably have been articulated through the use of personal items and dress accessories, of which combs are among the most common examples.

The present study is situated against this complex cultural backdrop. In broad terms, the study of combs should facilitate a nuanced understanding of culture contact and the negotiation of identity, and whether this was subject to regional variation. In order to assess diachronic change, combs from the pre-Viking period will be analysed and used as something of a control, while a study of combs from the medieval period will allow an investigation into the persistence and mutability of Viking Age identities. One might expect the initial 'native' and 'Norse' identities to have lost relevance by the twelfth and thirteenth centuries, or at least to have been redefined. Indeed, local and regional identities, or those related to status and occupation, may have been more important. An analysis of patterning in combs will allow these issues to be addressed.

### 1.3 Aims of the Study

The goals of the thesis are to clarify, systematise and compare comb typology (in a broad sense) across north-west Europe, in order to disentangle temporal and regional variability such that the latter can be interpreted in social and economic terms. In detail, the study is grounded in the context of early medieval Scandinavian settlement in England and Scotland. The thesis focuses on the period between AD 700 and 1400; a time that may be conveniently divided into three units:

- the *pre-Viking* period (often referred to as *Late Iron Age II* in Scotland, or the end of the *Middle Saxon period* in England, herein defined as the period c. AD 700-900<sup>1</sup>);
- the *Viking Age* (from c. AD 900-1100);
- the *Medieval* period (c. AD 1100-1400).

The availability of corpora from England and Scotland facilitates parallel studies of diachronic change, allowing one to elucidate the connection between trends in comb manufacture, use, and disposal, and broader political, 'ethnic', or economic themes. Thus, the project has the potential to impact upon a number of important debates. For instance, it will have important implications for the characterisation of the pre-Viking/Viking Age transition. Contingent upon the requisite chronological resolution, analysis of the similarities and differences between combs in northern England, Atlantic Scotland, Scandinavia and continental Europe may have an important role to play in the debate surrounding traffic in the North Sea prior to AD 795 (Hines 1984, 1992; Carver 1990; Myhre 1993; Smith 2000; Gaut 2002). The level and nature of early contact between Scandinavia and the British Isles has important implications for the relationship between British native and Norse incomer in the Viking Age.

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<sup>1</sup> The date for the start of the Viking Age is contentious (see for example Myhre 1993; Myhre 2000; Ambrosiani 1998; Feveile and Jensen 2000; Bencard 2004). In the British Isles, the historically attested raid of Lindisfarne in AD 793 is often applied, but this is of little archaeological utility. For the sake of simplicity, a division is drawn herein at the start of the 10<sup>th</sup> century. Though a Scandinavian presence in the British Isles is assured prior to this date, it is from AD 900 - in England in particular - that one may discern the clearest traces of Scandinavian settlement, political influence, and social interaction with the native population. One

The period between c. AD 900 and 1100 is key to the study, as it is during this period that combs start to be manufactured in large numbers. The thesis will question whether Viking Age composite combs in Europe (in particular those in England, Scotland and Scandinavia) are, as is generally believed, basically identical in structure and ornament. The problem will be addressed through analysis of morphology, ornament, raw material use, and method and quality of manufacture (see Chapter 4). If combs *are* all fundamentally alike, then one must consider the possible reasons for this. It may be that a common mental template was proliferated by means of 'diffusion', perhaps by a mechanism that incorporated the movement of itinerant craftsmen (Ambrosiani 1981). The recognition of inferior copies, and the comparison of artefacts from large and small settlements, should be most enlightening in this regard. Alternatively, long-range trade from a small number of large manufacture centres could explain the situation. Such an explanation would be dependent on the recognition of workshops, and very little variation in comb design or manufacture.

However, if it is shown that this assumption of uniformity is invalid, then the situation is somewhat different. One need not propose any central means of distribution, and diffusion may be less important. Moreover, the recognition of variation has implications for the understanding of identity, and will necessitate investigation into whether such patterning has a consistent regional basis, or associations with other phenomena.

The questions one may ask of combs from the medieval period are somewhat different. From the twelfth century onwards, local economy became thoroughly bound up in long-range trade, and the existence of overseas connections are no longer in doubt; rather it is the nature of such links that is of interest. During this period of economic intensification, a study of patterning in combs may not only elucidate the changing nature and success of what was an important medieval trade, but may be suggestive of whether it is best seen as a locally-based craft, or as part of a pan-European commercial expansion. Moreover, through the identification of regional patterning, combs may help one to understand the directions and nature of overseas political and economic relationships in different areas of northern Britain.

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might thus expect meaningful differences to exist between the comb collections of the eighth/ninth and tenth/eleventh centuries, such that their comparison may be instructive.

It will also be important to seek variation *within* these regions. In northern England, there is the potential for variation between York in the north, and Lincoln in the south of the sample area. The same might be true within Atlantic Scotland. The artefactual repertoires of northern and western Scotland are suggestive of different developmental paths, and hint at otherwise undocumented social and political complexity (Barrett 2003a). Such patterning clearly relates to regional variations in the manner in which identity is created and manipulated, and as such is highly informative to the student of social dynamics. One might expect such complexity to be articulated in personal items such as combs.

Finally, differences between the comb collections of sites of different character (large and small settlements) may relate to status differences between the 'consumers' at each site, or may be indicative of differential access to markets. Moreover, choices made in which market to patronise, or which type of comb to use, are fundamentally influenced by an individual's identity and habitus (see Chapter 3). Thus, combs may allow us to investigate changing concepts of identity in differing temporal, spatial and social contexts.

## 1.4 Methods of Analysis

Patterning cannot be understood until one has reconstructed the mechanisms by which spatial variations were produced. Thus, the first phase of analysis is to establish the means by which combs were produced and distributed. Through a critique of the arguments for various models of comb production, a reassessment of the level of sedentism, specialism, and full-time dedication of combmakers in the British Isles will be made (see Chapter 2). Given this foundation, an analysis of combs from the British Isles will enable the investigation and interpretation of synchronic and diachronic variation.

A comprehensive study of the combs from the British Isles is not feasible. Instead, two case studies will be considered (fig. 1.1). The first (Chapter 7) is referred to as 'northern England', and takes in Yorkshire, Lincolnshire, and Northumberland. The second study (Chapter 8) is termed 'Atlantic Scotland', and includes the Northern Isles (Orkney and Shetland) and the northern areas of mainland Scotland that are known to have been subject

to Scandinavian settlement (Caithness and Sutherland). It also includes the Western Isles, and mainland Scotland's western seaboard between Ross and Galloway. Both case studies can be justified in cultural, historical, and geographical terms (see Chapters 7 and 8).

These case studies will be compared and contrasted, and situated within their wider European context. This will be accomplished through reference to studies of large collections from Trondheim and Birka (undertaken by the author), and published studies of combs from elsewhere in the British Isles and northern Europe (see Chapter 6). Variations in raw material, form, decoration, method of manufacture, and context of deposition are considered to be culturally significant (see below).

The first technique developed and exploited is that of raw material analysis (see Chapter 5). Most preserved combs in Britain are of bone, antler, ivory, or horn. In the past, arguments have been made for the survival of reindeer into the Middle Ages in the British Isles. However, these arguments have been fairly emphatically refuted (see MacGregor 1985:37-38; Clutton-Brock and MacGregor 1988), and they will not be rehearsed herein. It suffices to state that any finds of reindeer antler discovered in sealed, well-stratified and dated early medieval contexts from the British Isles are overwhelmingly likely to represent imports or fossil material. The recognition of any such material is therefore fundamental.

A methodology for the identification of bone, elk, red deer and reindeer antler is defined. Previous attempts have been made at this (see Weber 1994; Smirnova 2002a), but prior to the production of this thesis none had been independently assessed, and it was necessary to test these techniques before deciding whether to adopt, adapt or discard them. This part of the study comprised a comprehensive literature review, analysis of modern bone and antler using low and high power magnification, and examination of artefacts using the same non-destructive techniques. The construction of such a methodology is a useful end in itself, as it will facilitate the identification of raw materials in a range of objects from many temporal and geographic contexts. However, the present aim of this technique is to understand the production and distribution of combs, and thus their role in the construction and conveyance of identity.

Raw material analysis is complemented by a style-based approach. Past typological schemes provide a useful background, but this thesis develops upon previous classifications through explicit use of quantifiable attributes. Furthermore, form and decoration are considered in terms of emblematic and assertive style (Weissner 1983). That is to say that the present focus is on their use in the communication of personal or group identity, rather than simply chronological and spatial patterning (although the latter are fundamental to the former). A study of variation in method and quality of manufacture, and the treatment of combs in terms of curation and repair, or breakage and discard, supplement this analysis. The identification of regional manufacturing traditions will, alongside raw material analysis, be useful in determining the areas of origin of combs, and identifying objects that have been 'displaced' by means of trade or exchange. Chronological or spatial patterning in mode of use and disposal will inform one's understanding of attitudes to combs, and, ultimately, the ways in which they were used to negotiate identity.

These variables will be expressed in quantifiable terms where practicable, and comparison will proceed through quantitative analysis. This approach does not suggest positivist sympathies; rather the resulting statistics are seen as a useful tool in the recognition of patterns that may be interpreted. Patterns are considered within the context of other, less quantifiable evidence, such as the nature of workshops, and the production and distribution of related artefacts such as comb cases.

## 1.5 Structure

This thesis is divided into nine chapters. Following this brief introduction, in Chapter 2 previous work carried out on combs is reviewed. Much of what has been achieved took place in continental Europe, and the chapter reflects this, with its main body concentrating on European approaches to the study of raw material analysis, comb style and production. However, the chapter also includes a consideration of the work accomplished on English and Scottish corpora.

Chapter 3 lays down the theoretical framework of the thesis. The assumptions and agenda of the research are described, but the chapter also locates the work within the history of archaeological thought. In particular, the nature of ethnicity and the meaning of style are

examined. Building upon these theoretical bases, Chapter 4 outlines the methodological approach taken in the project. This chapter outlines the methods for the analysis of raw materials, style, method and quality of manufacture, wear and repair, context and associations, briefly introduces the contents of the corpus (tabulated fully in **Appendix II**), and explains the methods of data analysis.

The methodological framework thus established, it is necessary to lay out in more detail those aspects of the approach that are relatively new or unfamiliar, and Chapter 5 outlines the novel scientific approaches applied herein. Methods of raw material analysis are described, and new identification criteria are tested with a combination of empirical investigation and blind trials.

In Chapter 6, a new typology is devised, and through a review of combs from around Europe, its chronological and spatial significance is ascertained. This creates a background for more detailed studies of material from northern Britain, and in Chapters 7 and 8, the results of this survey are presented. Chapter 7 considers a case study from northern England, framed within knowledge of Scandinavian parallels. Chapter 8 similarly focuses on the situation in Atlantic Scotland, making comparisons with the results of the previous chapter. Within this structure, results are divided as follows:

- Chronology
- Raw material analysis
- Ornament
- Method and Quality of Manufacture
- Mode of Use: Wear and Repair, Context and Associations

This structure allows the recognition of any chronological variability not already accounted for by the typology outlined in Chapter 5. Once the level of such variability has been ascertained, remaining patterning can be said to be spatially determined, and may be culturally important. Thus, following the presentation of these results, their significance and meaning are discussed in Chapter 9. Implications for our understanding of the

manufacture, exchange, and use of combs are discussed, but broader issues such as culture contact, economics and identity are given emphasis. The thesis closes with a few general conclusions and comments, addressing the potential for further research.

The thesis is arranged into two volumes. **Volume One** contains the text, while **Volume Two** consists of the associated figures, tables, and appendices. **Appendix I** is a glossary of terms used in the text, while **Appendix II** details the sites from which comb data was collected. **Appendix III** relates preliminary investigations into raw material analysis, including a list of sourced antler material. **Appendix IV** is a CD-Rom, and contains a copy of the *Combase* database developed and used in this research, together with an extensive collection of images of the combs recorded.

## Chapter 2 Literature Review

### 2.1 Introduction

At this juncture, it is appropriate to review work already accomplished in the field. While useful research into antler artefacts recovered in the British Isles has been carried out (*e.g.* Mann 1982; MacGregor 1985; Dunlevy 1988; Foster 1990; MacGregor *et al.* 1999a), the corpus from continental Europe has been subject to much greater, and more prolonged, scrutiny (see Jankuhn 1943; Roes 1963; Tempel 1970; Ulbricht 1978; Christophersen 1980a; Ambrosiani 1981; Ulbricht 1984; Wiberg 1987; Flodin 1989; Petitjean 1995; Vretemark 1997; Dijkman and Ervynck 1998; Luik 1999; Smirnova 2005). Indeed, much that we know about combs in the British Isles is grounded in comparison with Scandinavian, German or Frisian data. It is appropriate here to review some of this research, as it will help to elucidate the context in which these objects were produced, distributed and used. Thus, this chapter presents a review of stylistic, raw material-, and method of manufacture-based analyses carried out in Europe and eastern Russia. Each discussion is accompanied by a consideration of similar work that has been attempted on material from the British Isles.

Combs have been studied in Europe for a century (see for example Winter 1907), although research into the area has accelerated considerably over the last fifty years or so, as the excavations of early towns facilitated the publication of larger corpora of comb material. Over this time, a variety of approaches have been taken, often with different aims. Combs are sometimes seen as artefacts of primary use in dating (see for example Amorisi 1992:117-121). In contrast, some scholars have taken an active interest in combs for their own sake, attempting to understand the precise method by which they were produced (*e.g.* Galloway and Newcomer 1981), while others have looked at the relationship between bone and antlerworking and other industries (MacGregor 1998b). Some have investigated production capacity, questioned the recognition of combmaking as an industry in its own right, or considered it to be undertaken in parallel with other crafts (Ulbricht 1978; Christophersen 1980b; Christensen 1987). Still other researchers have developed upon this theme, to debate the degree to which the combmaker was sedentary, and to trace chronological changes in the nature of the craft (Christophersen 1980a; Ambrosiani 1981), while the questions

of distribution, trade and culture contact have often been paramount (Ambrosiani 1981; Ros 1992; Weber 1993; Callmer 1995). In recent years, there have been increasing attempts to look at the purpose or meaning of combs, sometimes with explicit consideration of context (see for example Petitjean 1995: 170-175; Riddler 1998; Clarke and Heald 2002). Nevertheless, traditional typological approaches persist (Dunlevy 1988; Luik 1998).

Despite this broad range of foci, archaeologists studying combs frequently exploit similar techniques. Thus, the key areas of research may be summarised as follows:

- The Analysis of Style
- The Analysis and Sourcing of Raw Materials
- The Nature of Comb Manufacture and Distribution

These areas of focus are discussed below. The review is necessarily partial, but it is hoped that a fair reflection of past research has been produced.

## 2.2 Typology

### 2.2.1 MacGregor's typology and the evolution of the comb

Prior to providing a critique of the various typologies that have been drawn up over the last few decades, it is appropriate to introduce a very broad classification of the combs that were produced and used over the centuries of present relevance (after MacGregor 1985). In simple terms, these can be broken down into four main designs (fig. 2.1), determined by their structure (simple or composite) and the number of tooth rows (termed 'single-sided' or 'double-sided'). Further details are provided in **Appendix I: Glossary**.

Combs of the Migration Period, Viking Age and later medieval period (fig. 2.2) grew out of earlier traditions: heavy, round-backed, one-piece, single-sided Germanic combs, and the one-piece, double-sided, frequently boxwood Roman combs. In the Migration Period and Viking Age, combs for everyday use were frequently of composite structure,

but the one-piece form persisted as highly ornate 'liturgical' combs (see Victoria and Albert Museum 1974: 31, 57, 60, 61; Petitjean 1995: 157-158), and enjoyed a resurgence in England as an object of mainstream use in medieval and later periods (MacGregor 1985: 81).

After the Roman period, in which we see the first, rudimentary composite combs, the fifth and sixth centuries saw the appearance in western Europe of more complex types, with up to six toothplates riveted together. Nonetheless, these forms had high, rounded backs, apparently recalling the form of simple combs (MacGregor 1985: 83). In later years, the composite comb took on a form of its own. There were a variety of designs, from the early triangular and zoomorphic types, through handled and hog-backed variants to the long, single-sided combs of the Viking Age.<sup>1</sup> Double-sided combs, though apparently common in the centuries following the Roman period, seem to have waned in popularity across much of northern Europe in the Viking Age (though the situation in Scotland may be more complex; see Chapters 6 and 8). However, they became the dominant comb after this period, and began to be produced in a variety of forms.

MacGregor has produced an accessible and easily applied classification that may be used or adapted for basic work on any comb material in northern Europe. Although his overview of the medieval evolution of the comb is not comprehensive, it provides a useful starting point for more detailed analyses. Such analyses are the subject of section 2.2.2.

### 2.2.2 Other typologies

Many workers have constructed classifications for narrower chronological and/or geographical units. For example, Anna Roes' (1963) study of the corpus from the Frisian terp mounds included several of the classes later incorporated by MacGregor into his (1985) scheme. In addition to one-piece combs and small, short-toothed horn combs (which she associated with the Vikings), Roes described a number of composite

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<sup>1</sup> It may be noted that long, single-sided Viking Age and later forms with connecting plates that are *plano-convex* in profile (including both 'Ambrosiani A' combs and MacGregor's 'trapezoidal' combs), are occasionally termed 'hogbacked' (e.g. Galloway 1990a: 666-667; Cook and Batey 1994: 22-24). This definition is not used in this thesis, and herein the term refers explicitly to combs with connecting plates

types dating from the Roman Age to the Carolingian period. These included 'round-butted' combs, triangular combs, double-sided (or 'two-edged') combs, single 'long' combs, combs with applied plaques ('barred' in MacGregor's typology), winged and crested ('hog-backed') combs, semi-double, and handled combs (table 2.1; fig. 2.3).

Dunlevy (1988) applied a similar typological approach to combs from Ireland. Many of her types are paralleled in MacGregor's classification, but as the focus is exclusively Irish, some of the types seem distinctively Celtic or Hiberno-Norse in character; at least they differ significantly from English and Anglo-Scandinavian types. Dunlevy recognized eleven classes of comb (A-K; fig. 2.4; table 2.2), with subclasses based variously on form, ornament and raw materials (bone, antler, wood or ivory). She then attempted to ascribe broad date ranges to each class.

This study is important, synthesising as it does material from a wide range of Irish contexts. Nonetheless, it can be criticised on a number of grounds. It is dependent on the preservation of entire combs, and on the original dates provided by excavators, rather than any critical reassessment of context. This means that many of Dunlevy's comb types have rather long periods of apparent currency. Moreover, the typology seems to have been created with no explicit purpose in mind. Although its role at first seems to be explicitly chronological, from much of Dunlevy's discussion we may infer a cultural agenda, as she characterises certain types as 'Irish' or 'Viking' (Dunlevy 1988: 341). Nonetheless, the typology represents an admirable attempt to impose some order upon a large and diverse collection of artefacts.

Other major typological studies of combs from the period of interest have been summarised by Ambrosiani (1981), but a brief recapitulation is appropriate here. Wilde (1939) studied 37 combs from excavations in Wolin, and divided them into five types, based largely on the shape of the cross section of the connecting plates, and with little attention paid to decoration. Soon after, Jankuhn (1943) published a new scheme in order to classify material from Haithabu. This classification did incorporate ornament, but was based on only seventeen stratified combs. The considerably greater quantities of material that were made available by excavation at Haithabu in the early 1960s enabled Tempel to devise a much more in-depth classification in his thesis (1969), and

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of bowed (concavo-convex) profile, frequently accompanied by large, 'winged' endplates (see Glossary;

in subsequent papers (*e.g.* 1970). His scheme took in elements of shape, cross section, placement of ornament, and motifs featured. It was later employed by Ingrid Ulbricht in her analysis of antler-working at Haithabu (Ulbricht 1978; see also Schleswig, Ulbricht 1984).

Similarly, Davidan (cited in Ambrosiani 1981: 17) classified combs from Staraja Ladoga into two form-based types, with each of these broken down into sub-types recognisable by a combination of shape and ornament. More recently, Ambrosiani (1981) established a classification for her study of the corpus from Birka, also applied to the Ribe assemblage. Given that Ambrosiani's scheme is frequently referred to in the literature, it is appropriate to review it in some detail.

Ambrosiani describes two principal types of Viking Age comb, 'A-combs' and 'B-combs' (fig. 2.5). A-combs are the earliest variety, believed to date from the ninth century until the mid-tenth century. They are found in the Baltic, Frisia, Scandinavia, Scandinavian England and Scotland, and Ireland. They are recognisable by their great length and slightly curved backs, while their connecting plates have a 'shallow convex' cross section (Ambrosiani 1981: 26). Defined more quantitatively, the connecting plates of these combs have a depth : thickness ratio of greater than 3.5:1.

The ornament of A-combs generally consists of ring-and-dot, interlace, or simple incised lines, frequently with edge-parallel marginal lines, and they can be divided into three subtypes, based on this ornament. Type A1 typically has no decoration, or merely bands of vertical incised lines. Type A2 is characterised by ring-and-dot decoration, while the later variant, A3, exhibits the interlace technique, often as a central band bordered by elongate fields which follow the shape of the connecting plate. Within these categories, there is still a great deal of variation in ornament (see Tempel 1969).

In contrast to the 'A' group, the connecting plates of 'B-combs' are approximately semi-circular in cross section (Ambrosiani 1981:26), with a depth : thickness ratio of less than 3.5:1. Ambrosiani divides these into four subtypes, again based on decoration. Combs of type B1 are characterised by their decorative use of 'lozenges', and may be divided into three subclasses according to the decorative arrangements or schemes (see Chapter

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also MacGrgeor 1985: 87-88).

4). Type B1:1 features saltires, and B1:2 crosshatching, while B1:3 displays knotwork or simple interlace. Type B1:2 seems to be the oldest of all the B-combs, and was probably in circulation throughout the tenth century.

In contrast to B1's lozenges, type B2 combs are decorated with incised vertical lines, and B3 with ring-and-dot, while B4 lacks any ornament. Based on their distribution and associations in the graves at Birka, Ambrosiani proposes that B-combs belong largely to the tenth century, though types B2-B4 seem to have persisted until the eleventh. The application of this classification to combs from sites other than Birka seems to broadly support Ambrosiani's chronology, with 'A-combs' preceding 'B-combs', although there is some overlap (Ambrosiani 1981:26-32). Ambrosiani also proposes different 'origins' for the types, with A-combs being first developed in northern Scandinavia, and the B-comb template being 'diffused' from south of the Baltic.

However, it is important to evaluate the validity of any such far-reaching scheme. On examination, the ratio-described type differentiation does seem to represent a genuine separation (fig. 2.6; see Ambrosiani 1981:71). Furthermore, their overlapping but recognisably different distributions and date ranges suggest that the types have analytical utility (fig. 2.7). However, Smirnova (2002a: 27) has pointed out that the lack of consideration of actual dimensions (rather than ratios) conceals something of an overlap in terms of size. This leads to the question of whether the types have been somewhat arbitrarily defined.

Once again it is important to ask what the purpose of the typology is. In this case it may be that Ambrosiani has attempted to answer too many disparate questions with a single classification. Her discussion of type distributions considers geographical variation across Europe, while her analysis of the combs from the graves at Birka applies the same classification to issues of chronology and cultural difference. Moreover, though the scheme was originally developed specifically for use at Birka, it has since been applied rather uncritically at a range of sites across Europe and the North Atlantic. It therefore seems important that we consider Ambrosiani's scheme with caution (see below).

However, Ambrosiani's research does not stand unchallenged as the definitive work on early medieval combs. Indeed, since the publication of *Viking Age Combs, Comb Making and Comb Makers*, there have been two important studies of combs from sites to the east of Scandinavia. Heidi Luik's analysis of combs from Estonia (Luik 1998; see also Luik 1999, 2001, 2005) is of note, in that it made available as comparanda a relatively poorly-known corpus of material. Luik's approach was explicitly typological, and her work is useful in that it provides a classification covering a broad chronological range between the ninth and fifteenth centuries.

In contrast, Smirnova's (2002a, 2005; see also Smirnova 1997, 2001a, 2001b, 2002b) study of the combs from Novgorod takes an entirely different approach. Rather than attempt to situate the material within the confines of previously established and - in her view - inappropriate typologies, Smirnova endeavoured to start with a clean slate. Furthermore, rather than try to recognise types as the first stage of analysis, she simply recorded a number of decorative and formal traits, and, after noting their prevalence and various arrangements, began to develop a system of *schemes*. Interestingly, Smirnova notes that while the use of particular decorative motifs may not be diagnostic, the manner in which they are arranged may be chronologically variable. Although this marks something of a deviation from the traditional method still carried out by some workers in the field (see for instance Luik 1998), it should be noted that Smirnova's treatment of form is nonetheless a conventional dimension-based typology (see **fig. 2.8**). Aspects of her method have utility in a western European context, and will be adopted in this thesis (Chapter 4).

### **2.2.3 Typological analyses of material from England and Scotland**

Typological studies of the scale and depth discussed above have not yet been applied to material from mainland Britain. Nonetheless, smaller, more limited analyses have been carried out. In England, a number of studies of particular comb types have been undertaken, interested primarily in distributions and cultural affinities (see for example MacGregor 1975a; Hills 1981; Riddler 1990; Riddler 1998; Smith 2000, 2003; see Discussion below). Other than this work, and the numerous short descriptions and catalogue entries in site reports and journal news articles (*e.g.* Waterman 1959; Hodges 1980; Mann 1982; Alexander 1987; Foreman 1991; Riddler 1991; Foreman 1992; Rogers 1993; Cook and Batey 1994; MacGregor 2000), very little in the way of typological

analysis of combs has been published in recent years. MacGregor's review of the material from Coppergate and other sites in York represents by far the most thorough study of English material published to date, and in its focus on formal and decorative attributes, it points the way for future study (MacGregor *et al.* 1999b).

The situation in Scotland is similar, where approaches to the analysis of combs have been largely typological and comparative. One of the most oft-cited studies is C.L. Curle's work on the finds from the high status site on the Brough of Birsay, Orkney (Curle 1982; fig. 2.9). Double-sided combs were classified as Types A and B (not to be confused with Ambrosiani's single-sided A and B combs), but a few examples show mingling of form and decoration (Curle 1982: 57). Type A were found primarily in the 'Pictish' levels, type B in the 'Lower Norse' levels. Type A, of which there were only four examples, have parallels in Ireland (Curle 1982: 22). These combs are often found on the same sites as single-sided high-backed combs, and both are illustrated on Class I Pictish symbol stones, suggesting that they may well be contemporary (Curle 1982: 22).

From the Lower Norse horizon came Type B double-sided combs. Although they vary considerably, they are all very different to Type A in that they are larger, with ungraduated teeth, leaving only a thin un-toothed band at the comb end. These combs are described as 'native'. They are the type frequently depicted on Class II Pictish symbol stones (Foster 1990: 162).

A few examples of what are described as 'Norse' type combs were found in the Lower Norse horizon at the Brough of Birsay. These are single-sided composite combs, constructed of antler with iron rivets. In the Middle and Upper Norse horizons, greater numbers of single-sided Norse types were found, with the Upper levels containing ornate variations. The typology is summarised in table 2.3.

Curle's typology is clearly intended to elucidate cultural difference, and it led to the suggestion that the persistence of Pictish material culture in Norse phases indicates some level of coexistence between native and incomer. Unfortunately, there are serious problems associated with the corpus. The site is only partially excavated, but more importantly the stratigraphy is unclear and the chronology weak, with many objects unstratified or displaced by surface disturbance (see Curle 1982: 15; Chapter 8 this

thesis). Furthermore, excavation took place over an extended period of time, and was directed by a number of different archaeologists. It is unclear how these factors may have influenced the typology developed by Curle, but it has serious implications for any reanalysis of the material, as context and chronology are so insecure.

For these reasons we should be careful not to jump to conclusions regarding the relatively high number of native combs, and their persistence into Norse levels. Though this mixing of material culture may suggest some level of Norse-native integration, Sally Foster (1990: 168) has pointed out that of twenty Late Iron Age combs found in Norse contexts in Scotland, only three were near complete, while many more complete combs were found in earlier levels. This may suggest that a number of Late Iron Age style combs found in Norse period contexts are actually residual, and will be further investigated in Chapter 8.

Despite these flaws, explicit or implicit references are frequently made to Curle's classification (*e.g.* Smith 1990:40; Porter 1997: 96-97). Furthermore, excavation reports from Freswick Links, Caithness (Batey 1987), Skail, Deerness (Porter 1997), Scar, Sanday (Owen and Dalland 1999a), the Brough of Birsay (Curle 1982), and Jarlshof, Shetland (Hamilton 1956), have simply attempted to describe artefacts, to compare them with European parallels, or to classify them according to pre-defined types. This approach relates in part to problems of excavation, dating, insecure contexts and poor stratigraphy at many of the important sites in the Northern Isles, and partly to the fact that individual excavations have rarely produced large numbers of combs. Moreover, assemblages that *have* been subjected to more detailed study, such as Whithorn (Nicholson 1997), have simply seen the theories of other scholars (in this case Ambrosiani) taken onboard or adapted for the particular circumstances.

Thus, if new interpretations are to be possible, the scale of analysis has to move beyond the individual site, so that we may take a regional view. Such an approach not only allows the recognition of geographical and (given adequate chronological resolution) temporal variation, but also increases the sample size and chance of generating statistically significant results. Sally Foster (1990) did attempt such a review of the earliest combs of present interest from Scotland. At the time of writing, the need to improve understanding of Late Iron Age chronology was paramount, and the

importance of combs in establishing such a chronology for other artefacts and structures was stressed. However, since the publication of Foster's article, few have moved beyond this remit, and little has been learned of the role of combs as social objects. Furthermore, scant attention has been paid to the means of comb manufacture or distribution in Scotland (see Section 2.4 below), and little discussion relating to their place in society has been generated. All in all, a combination of poor stratigraphy and a concentration on typology have proved somewhat limiting.

Andrea Smith (2000, 2003) has attempted to transcend these confines through a study of combs, contemporary literature and iconography. Smith has sought to determine the influences that gave rise to the apparently sudden appearance of single-sided high-backed, and double-sided composite combs in Atlantic Scotland. She proposes that the manufacture of these types grew out of a knowledge of the forms gained first through gift exchange relationships with the Anglo-Saxons (for high-backed combs), and later through trading relationships with Frisian merchants (for double-sided combs). Though direct evidence is scant, it is difficult to argue with these ideas in principle, and Smith's theory is appealing. However, one might note the existence of Early Irish and Roman prototypes that seem an equally or more likely inspiration for the Scottish combs (MacGregor 1985: 83-85, 92).

For the medieval period, Clarke and Heald (2002) have also attempted to move beyond typological analysis. Their study of Late Norse double-sided combs with copper alloy rivets has identified possible regional groups: offset 'fish-tail' combs in Caithness, combs with concave endplates in Shetland, and straight-ended forms in Orkney (Clarke and Heald 2002: 90; **fig. 2.10** and Chapter 8 this thesis). They interpreted this pattern as the result of the need to display local identity and emphasise regional differences. Although speculative, this paper is the first of its kind, and is a sign that the social potential of the Scottish corpus is beginning to be realised.

#### **2.2.4 Discussion**

It is now appropriate to consider the significance of these typological studies. The recognition of variations in form and decoration is important in itself, and the study of large quantities of artefacts required in typological study facilitates greater understanding of the material. The tabulation of provenances and respective dating evidence allows

the assessment and reassessment of the distributions of types. Thus, the recognition of types allows us to trace and source the movement of objects and/or ideas, and to study this in terms of human contact and interaction.

For example, Ambrosiani's (1981) study of Scandinavian combs led to a re-evaluation of the origins of long combs. It was previously believed that A1 and A2 combs were of Frisian origin, while the A3 type hailed from Scandinavia, but Ambrosiani provided evidence that all three types could be viewed as part of a Scandinavian chain of development. Ambrosiani also noted the rarity of B-combs in Norway, Frisia, and the Northern and Western Isles, and suggested a more southerly point of origin, perhaps in the south of the Baltic area (Ambrosiani 1981: 36), although there seems to be little clear evidence for this.

Similarly, the recognition of the distinctive early class of barred zoomorphic combs (table 2.1) has led to considerable debate concerning their origins. Largely because of the location of the earliest discoveries, these objects were originally thought of as Frisian (see Hills 1981: 101). There no longer seems to be any reason to perpetuate this theory, as large numbers have been found at English sites such as Spong Hill, Norfolk (Hills 1981; see also Hodges 1980), and their apparent depiction on Pictish symbol stones in Scotland is intriguing (see Smith 2000, 2003).

A similar argument has surrounded the study of the later 'handled' combs (table 2.1). Originally, but with little evidence, they were thought to be Scandinavian (Hodges 1905, cited in Riddler 1990). Later in the 20th Century, a Frisian origin was proposed, given a cluster found in that area of northern Europe (see Roes 1963). However, a more recent overview by Ian Riddler (1990) has shown that they are not particularly common in this region, while an increasing number have been found in England. Riddler proposes that those combs excavated in England are of Anglo-Saxon origin, and that the type is an important Saxon comb form. Furthermore, Riddler believes that continental occurrences of a form of handled comb particularly common in England represent Saxon exports (Riddler 1998:195).

However, this view of artefact types as straightforward indicators of origin is a little simplistic. Through amalgamation, typologies may obscure one's vision, and hinder the

recognition of a variety of complex, interacting variables. Thus, it seems reasonable to believe that contact between people might be better reflected at a finer level of abstraction, and it may be more productive to look at individual attributes of comb design. This approach will be discussed more fully later in this thesis (Chapters 3 and 4).

We should no longer be satisfied with typology for typology's sake. A classification lacking a pre-defined purpose is of limited value, and a range of sophisticated techniques of artefact analysis is available to us. If, in addition to typology, the fields of manufacturing, use wear, and raw material analysis are considered, one may gain greater insight into issues such as long-range trade, culture contact and identity. Indeed, such analyses have already proved enlightening in the study of other materials (*e.g.* Walton Rogers 1998; Paterson 2001), and in the study of bone artefacts from other spatio-temporal contexts (*e.g.* Choyke 1997, 2001; David 2003a; 2003b). Moreover, these analytical methods have a history of application in the spatio-temporal context of present interest, though the potential implications of results have not always been fully thought through (see below).

## 2.3 Raw Material Analysis

### 2.3.1 The potential of raw material analysis

It may be possible to source combs and other antler objects. To do this we must be able to find a connection between the material itself and a particular region, to the exclusion of other areas. The key to this is biogeography; today the various species of cervid that may be represented in these artefacts all have distinctive biogeographic zones (**fig. 2.11**).

The red deer (*Cervus elaphus*) can be found over much of the continent, but only as far north as Skåne (southern Sweden), with an outlier in western Norway, while the European elk (*Alces alces*) generally occupies more northern areas, and can be found in south-eastern Norway, Sweden and Siberia. The reindeer (*Rangifer tarandus*) has a similar, but more northerly distribution, and is not found in southern Scandinavia (MacGregor 1985: 34-35; see Chapter 6).

Unfortunately, the *past* biogeographic ranges of cervids are more difficult to establish with any degree of precision, as the majority of deer remains dating to within the last two millennia have been found in anthropogenic deposits, and consist largely of antler (see below). There is a genuine possibility that such remains represent imported objects or raw material, making it difficult to draw biogeographical inference from them without succumbing to circularity of argument. Moreover, the status implications of deer colour our interpretation of finds. Access to deer may well have related just as much to socio-economic standing as it did to geographical proximity, and the presence or absence of cervid remains at a settlement might relate as much to the status of that settlement as to the distribution of the animals themselves. All in all, the record from the Iron Age to medieval period is rather insecure.

Thus, while we may temper inference from settlement deposits with knowledge of the habitats of the various species, to some extent we must rely on spotfinds from the periods preceding the Viking Age, and historic records from many hundreds of years later. This is far from ideal, but in reality this scale of analysis should suffice for the recognition of any broad changes in population size or distribution. By mapping fossil and subfossil spotfinds, and collating historical data, Ahlén (1965) attempted to do just this for the Scandinavian range of red deer. He had little evidence for the Sub-Atlantic period (incorporating the Iron Age, Viking Age, and Middle Ages), but noted that prior to this red deer were known in much of Denmark, but only the west coast of Norway, and south-west Sweden. Most notably, there was no evidence for red deer crossing the mountains into eastern Norway. In the historic period, the range is similar, but contracted, and Ahlén suggests that this is related to the changing landscape that accompanied the rearing of large numbers of domestic animals, rather than to the hunting of deer themselves. Thus, although there is little direct data for the Viking Age, it is safe to say that the distribution of red deer differed little from the situation either earlier in the Holocene, or in the Modern period.

In the past, elk may have strayed further south than they do today; they seem to have reached the Ukraine (MacGregor 1985: 35). However, from the Roman period onwards there seems to have been a decline in elk populations (*e.g.* Vretemark 1997: 205), and it is unlikely that their biogeographic range was much more extensive than it is today. Given that this thesis is primarily concerned with the British Isles, it will suffice to say

that there were no elk populations on the western side of the North Sea. Similarly, the range of reindeer may have changed over time subject to human interaction and the extent of the tundra environment, which may have stretched into southern Norway in the past (Kjos-Hanssen 1973), but one can safely say that the species had been extirpated in the British Isles long before the Viking Age (Clutton-Brock and MacGregor 1988).

A little more precision may be attainable through informed extrapolation from the zooarchaeological evidence of a few sites relating to the period of present interest. For instance, one may confirm that southern Scandinavia (Reichstein 1969; Hatting 1991) and Skåne (Ahlén 1965: 178; Ekman 1973: 48; Christophersen 1980b: 156) were broadly characterised by the presence of red deer populations during the Viking Age and medieval periods. Beyond Skåne, most of Sweden, is characterised by the presence of elk; this certainly seems to have been the dominant species from Skara northwards (Vretemark 1997: 202, 204).

Elk do not seem to have been important in Norway, though Roman and medieval trapping systems at Dokkfløy suggest that they may have been present east of the mountains (Myhre 2000: 39). Nonetheless, in general one might expect reindeer to dominate in the north, with red deer most common in the south. However, while finds from sites such as those around the Varanger fjord (Hambleton and Rowley-Conwy 1997) support the former assertion, the situation is a little more complex in the south. For instance, on the mountain plateau of Hardangervidda (central southern Norway), and in Dovre (several hundred kilometres further north), there is evidence for large scale reindeer trapping in the medieval period. At Hardangervidda, *R. tarandus* has been identified in faunal remains from contexts carbon-dated to between the twelfth and fifteenth centuries (Blehr 1973: 104; Kjos-Hanssen 1973: 77), and it has been suggested Lie (Lie 1988: 191; Vretemark 1997: 204) that this was the source for the large quantities of reindeer antler identified in eleventh to fifteenth-century settlement deposits at Bergen, Oslo, and Kungahälla, while the *R. tarandus* material used at Trondheim may well have come from Dovre.

With distributions of these species now established in broad terms, it is possible to consider the application of raw material analyses to archaeological evidence.

Surprisingly, given the increased frequency of publication of comb material in recent years, raw material analysis of artefacts has not yet made a significant contribution to the debate surrounding comb production and distribution (see section 2.4 below; of the situation with manufacturing waste, Vretemark 1997; Ambrosiani 1981). This is unfortunate, as the development of scientific methods for the characterisation and sourcing of raw materials in other media has provided archaeologists with a useful tool (e.g. Horton 1992; Walton Rogers 1998; Hall *et al.* 1998). This problem undoubtedly owes much to the difficulty of attributing highly-worked antler to species. Indeed, if both the inner cancellous tissue and the outer surface have been removed, it may be difficult to distinguish antler from bone (Ambrosiani 1981:102; O'Connor 1999: 1900).

But what of the potential of the biological and chemical techniques much vaunted in other areas of the discipline? Trace element analysis may be one such option (see MacGregor 1985: 36), while genetic analysis seems an obvious possibility. Indeed, ancient DNA has frequently been extracted successfully from archaeological animal bone, and has already helped to answer archaeological questions (see for example Hardy *et al.* 1994; Bailey *et al.* 1996; Barnes *et al.* 2000; Arndt *et al.* 2003; Geigl and Pruvost 2004; Yang *et al.* 2004; Larson *et al.* 2005). Unfortunately however, the destructive nature of these techniques rules them out at the current time.

Nonetheless, much success has been gained in the visual analysis of waste products and half-finished articles. Such materials far more frequently display the gross morphology and cancellous core that can be so useful in species attribution than do their finished counterparts. At this juncture, it is not appropriate to discuss the findings of such analyses in detail, but the results are summarized in **table 2.4**. In all, it can be seen that while raw materials vary from site to site, choices cannot always be explained in biogeographical terms; supply networks need to be taken into consideration.

### **2.3.2 Continental work**

Ingrid Ulbricht carried out such work on the material from Haithabu (Ulbricht 1978: 16-24). She found that much of the raw material was supplied from Haithabu's hinterland, with red deer and roe deer making up the bulk of the waste, while a small amount of local elk antler was also used. However, it seems that a certain amount of

reindeer antler was imported, probably from Norway (Ulbricht 1978: 141). Ulbricht interprets this as a solution to the problem of demand outstripping local supplies.

Maria Vretemark's work at eleventh and twelfth-century Kungahälla and Skara is also important (Vretemark 1990, 1991, 1997, 2001; see also Rytter 2001). She noted that while manufacturing waste at Skara consisted very largely of antler from the local elk, at relatively nearby Kungahälla, reindeer was dominant. This material was imported, she suggested from an area over 300km to the north, presumably by boat. When, in the thirteenth century, craftsmen in other towns began to exploit bone rather than antler, at Kungahälla the use of reindeer antler continued, suggesting that the supply was both substantial and reliable (Vretemark 1997). One might thus suggest that the manufacturing waste at Kungahälla relates to the 'consumption end' of the medieval trade in reindeer antler for which the 'production end' is well-evidenced (Storli 1993; Anderson 1981; Blehr 1973; Martens 1982: 41-43; Myhre 2000: 38-39; see also Christensen 1987; Chapter 6 this thesis).

However, the study of materials in completely worked objects, in which both the cancellous tissue and surface material have been removed, may be much more problematic. Ambrosiani attempted to show differences between bone and antler from various species using high power microscopy. For example, at magnifications of c.120x, she claimed to be able to identify a more lenticular structure in antler than in bone, although her photographs display something more akin to undulose lamination or channelling than lenticulation (fig. 2.12). Moreover, she conceded that this method of differentiation was not quantified, and variations between different parts of the antler or bone were not taken into account (Ambrosiani 1981:102). Furthermore, there are multiple confounds (e.g. age and environment) that must be considered in any study of this type (see Chapter 6).

Ambrosiani has also been involved in work on the differentiation of species in archaeological worked antler (see Carlé *et al.* 1976). In particular, she worked on the distinction between red deer (*Cervus elaphus*) and elk (*Alces alces*). She suggested that red deer antler could be recognised by its 'regular structure', even in artefacts of early medieval date, but again this was unquantified (Ambrosiani 1981: 107).

Carlé *et al.* (1976) noted that elk antler retained a network of blood vessels, even some years after shedding (fig. 2.13), while red deer antler often seems compact and relatively homogeneous. In archaeological material, elk antlers were found to preserve some of this structure as 'black threads', while red deer antler, as in modern material, is made up of an almost invisible white network. Ambrosiani (1981: 103) claimed that such 'red deer' characteristics are observable in half-finished archaeological articles from Ribe, and that combs from Birka show what she refers to as 'elk traces'. This distribution is important, as it informed Ambrosiani's theories regarding production and dispersal in early medieval Scandinavia (see below, Section 2.3.2), but her method (and hence results) would clearly benefit from independent confirmation.

Another good example of this kind of work is that done by Lyuba Smirnova (2001a; 2002a) at Novgorod. Smirnova believes that she can reliably distinguish red deer and reindeer antler even in well finished artefacts. For her, the key is in the recognition of the exploitation of porous antler, which may be visible on the backs of billets and the sides of connecting plates. Given its mechanical inferiority, use of the cancellous core material would have been avoided where possible. However, in reindeer antler, in which the boundary between core and compact outer material is gradational (fig. 2.14), the incorporation of porous antler into objects may have often been unavoidable, and perhaps considered acceptable. In red deer antler the boundary between core and outer zone is less gradual, and it would have been much easier to discard any porous material. Smirnova's methodology shows potential, but must be subjected to close independent scrutiny before it becomes widely accepted or applied. For this reason, it will be investigated herein (Chapter 5).

It should be noted that some attempts have been made to recognise antler working waste from different populations of deer *below* the species level. This has been attempted through the recognition of similarities they may have with the antlers of the animals in a particular area. Although some quite subjective studies have been carried out, such as the pairing up of antlers (*e.g.* Müller-Using 1953), the most commonly taken approach has been metrical and statistical analysis. For example, Christophersen (1980:158-159) compared burr sizes from shed and butchered antler found at Lund, Sweden. He noted differences between shed antler from the site of Stortoget and all material (shed or butchered) from the other sites in Lund. His sample size was rather

small, but Christophersen's work nonetheless points towards the possibility of some importation of shed antler to the town from an atypical source. However, one must also consider the possibility that unusual size distributions simply relate to selective collection procedures.

However the results are interpreted, one must be aware that such population-level analyses suffer from more problems even than species-level investigation, as confounds such as environment, nutrition, age and sex become more important (see Albarella 1997; Ashby 2004). While such analyses may suggest trade in objects or raw materials between regions, they cannot prove it. Thus, it seems clear that the greatest potential lies in the development of an accurate and reliable system of identification of antler to the *species* level, perhaps of the kind proposed by Smirnova (2001a; 2002a). The generation of such a scheme is one of the goals of this thesis (Chapter 5).

### 2.3.3 Work in England and Scotland

To the author's knowledge, there has been very little work on the recognition of antler to species in artefacts from early medieval sites in England. This may be due to a belief that such work would prove unrewarding, given the assumption that most antler will have been taken from local red deer populations (though see Riddler 2003).

Furthermore, the population sourcing techniques applied on the continent (*e.g.* Müller-Using 1953; see above) seem to have been rarely applied in this country (see Riddler 1992: 150 for a rare example).

Where possible, attempts are typically made to differentiate between bone and antler in finished products from Britain, though there does not seem to be a standard methodology for this (*cf.* S. O'Connor 1987; Drinkall and Foreman 1998: 287). In addition, species-level analysis of waste and semi-worked material has frequently been carried out (*e.g.* MacGregor *et al.* 1999) and the results used to address a number of questions. In the following, the more pertinent issues relating to raw material exploitation will be discussed, and studies of the collections from key sites will be included by way of illustration.

An interesting theme that emerges from the study of many early medieval emporia is the apparent Mid-Saxon interest in the use of postcranial bone in comb production (*e.g.*

Riddler 1992; Rogers 1993). Frequently at such sites, bone seems to have been used for connecting plates, while antler toothplates were preferred. MacGregor and Currey (1983) have demonstrated the mechanical superiority of antler, and it seems clear that early medieval combmakers were aware of the properties of these materials. It has frequently been noted that bone takes a better polish than antler (see S. O'Connor 1987; Chapter 4 this thesis); perhaps this property was appreciated in the design of connecting plates. Whatever the practical reasons for the strategy, Riddler (1992:149) notes that this interest in bone differs from both earlier and later approaches, and suggests that as such it may betray links with early Germanic bone-working practice, rather than Roman antecedents. Nonetheless, the comb *forms* do appear to be of Roman inspiration.

A higher resolution analysis of raw material use at Hamwic has led to the suggestion that there was a foreign waterfront enclave (see Riddler 2001). This was originally proposed following numismatic and pottery analysis, but the bone-working evidence now arguably lends support to this theory. While elsewhere in Hamwic waste materials showed that the raw materials exploited were almost entirely antler and cattle metapodials, at the Chapel Road site bone-working is centred on the use of a much wider range of postcranial bones, and antler is rare (Riddler 2001: 65). Together with differences in technical working practices, this may provide evidence of production for different markets, though the reasons for such different demands is unclear.

Bone was more important in Middle Saxon levels at Fishergate than at Viking Age sites from York. Indeed, bone seems to have been used in the production of handled combs, contrary to suggestions that antler was preferable for this form of artefact (*cf* Rogers 1993: 1393; Alexander 1987: 103). For combs of all types, the numbers of bone and antler connecting plates found at Fishergate were roughly equal, perhaps suggesting that there was no real material preference for this component. Indeed, it seems that even bone toothplate production was frequently attempted, although most completed billets were of antler, suggesting that many bone blanks were discarded as unsatisfactory prior to riveting (Rogers 1993: 1257).

As at many sites in Britain and Europe, most of the antler exploited at Fishergate seems to have been shed, rather than taken from butchered animals (Rogers 1993: 1250-1251). The bone of course, would have been taken from butchered carcasses, and the faunal

remains did indicate livestock slaughter and butchery on or near to the northern end of the Fishergate site (O'Connor 1991: 282). Perhaps this access to fresh material encouraged boneworkers to carry out their craft here. Somewhat surprisingly, evidence of close industrial interdependence is yet to be found at other contemporary sites such as Hamwic (Riddler 1992: 150).

At Flaxengate, Lincoln, (where most finds come from tenth to eleventh-century deposits), bone was important in all phases. Mann (1982: 45) suggests that this indicates that antler was always in fairly short supply at this site. While one comb from a ninth-century context was made entirely from bone, Mann reports that the most common use of materials at the site was to use bone for toothplates, and antler for connecting plates. If we turn now to the Viking Age in particular, analysis of the waste material at Flaxengate showed that most antler was from red deer, and while shed antler dominated, butchered material was also represented. Horn and ivory were also present in small amounts.

The best example of a study of comb production is the work carried out at Coppergate, York. Here, red deer antler was clearly the most frequently utilised material, but bone and boxwood were also exploited (MacGregor *et al.* 1999a: 1925). Shed antler was the most commonly recognised waste material (MacGregor *et al.* 1999a: 99), as is the case for other Viking Age sites in England (see MacGregor 1985: 35-37; Mann 1982) and elsewhere (Müller-Using 1953: 64-67; Ambrosiani 1981: 99; Vretemark 1990: 140; but compare Smirnova 1997: 139).

To summarise the situation in England then, objects constructed from skeletal products have been routinely subjected to raw material analysis. However, identification to species level has not frequently been undertaken, except on manufacturing waste, and though the differentiation of bone and antler is often attempted, methodologies and criteria are not always explicitly stated. Moreover, though the potential of raw material analysis for increasing our understanding of early medieval society is starting to be realised (*e.g.* Riddler 2001), broad surveys of large corpora have yet to be undertaken.

The issue of raw material use is rather more heated in Scottish archaeology. The primary reason for this ferment is the publication of a series of controversial papers

(Weber 1992, 1993, 1994, 1995, 1996; Ballin Smith 1995) in which it is argued that certain types of comb (including the 'Pictish' and 'native' types discussed by Curle) were constructed from reindeer antler. Given that reindeer are not known in Scotland post-6000BC (Clutton-Brock and MacGregor 1988), the most feasible explanation is that either combs or raw antler for working were imported to the Northern Isles from Norway. This is not in itself unlikely, as there is no reason to suspect that Picts and Scandinavians were unknown to one another prior to the Viking Age (see Myhre 1993). Indeed, it seems clear that a certain amount of trans-North Sea trade did take place in the early medieval period (see Hines 1984; 1992; Smith 2000; 2003; Gaut 2002). However, to invoke direct contact with Scandinavia would be to considerably alter the way that many look at the Scottish Late Iron Age and the Pictish-Norse transition. At present Weber's comb work is the only evidence for such early contact, and many archaeologists are yet to be convinced (see Graham-Campbell and Batey 1998: 23; Smith 2000:185; *cf* Gaut 2002).

The analyses published by Weber were carried out by Rolf Lie of the University of Bergen's Zoological Museum (Weber 1994: 190). However, discussion of the methodology used is limited to a brief summary by Lie, appended to Weber's 1993 paper, and is not sufficiently detailed to allow independent evaluation of the identifications by an outside observer using the same methods. Antler identification replication tests have been undertaken by Anne-Karen Hufthammer, who trained with Lie (Weber 1995), but these analyses involved different (Norwegian) material, and the combs from the Northern Isles have not been restudied in detail. It is therefore difficult to assess the reliability of the techniques employed, the results produced, or the explanations provided. Thus, until such time as our knowledge of the subject is increased, we must treat Weber's findings with considerable scepticism.<sup>2</sup>

## 2.4 Comb Manufacture and Distribution

### 2.4.1 The 'Itinerant Craftsmen' model

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<sup>2</sup> An independent investigation using modern antler was recently carried out as an undergraduate dissertation project at the University of Edinburgh (Stansfield 1998), but unfortunately the analysis was a little superficial, concentrating on differences in colour rather than macrostructure. Such criteria are likely to be of limited utility in the study of artefacts.

One of the subjects of debate in this field concerns the nature of comb production in the early Middle Ages. In particular, it relates to two inter-related questions: whether combmakers were engaged in their craft on a full- or part-time basis, and whether they were based in permanent workshops, or led an itinerant way of life. Both raw material and stylistic analysis have been brought to bear on the topic, but the debate has not yet reached a satisfactory conclusion. This is partly because of the inconsistent nature of the evidence, but theoretical approaches and methodological techniques may also be partially to blame (see Christophersen 1980: 165).

The debate began in earnest with Ulbricht's (1978) work on the extensive deposits of antler-working waste from Haithabu. Ulbricht claimed that the lack of evidence for permanent, long-term comb-workshops, or of waste from multiple generations of comb-makers could best be explained by seeing the production of combs and antler objects as a part-time occupation at best, shared with other craft or subsistence activities (Ulbricht 1978: 102-122, 140). Similar explanations have been proposed for early deposits at Trondheim (Nordeide 1992) and Sigtuna (Ros 1992), although these arguments are difficult to support.

Christophersen (1980b) saw the situation as somewhat more complex and dynamic than other workers had suggested. He proposed a tripartite development in which comb production (and possibly other industries) passed through a transition from individual self-sufficiency to highly specialised craft. This seems generally feasible, although Christensen (1987: 29) has argued that the specialised skills and tools required to make a composite comb negate the possibility of a phase in which everyone produced their own.

Indeed, Christensen (1987) saw the part-time role of comb-makers slightly differently, and suggested that, in Iron Age Scandinavia at least, 'mountain hunters' produced and distributed combs composed of antler from the reindeer they had themselves hunted. His evidence was primarily the association of craft tools and hunting paraphernalia, and considerable research is required if this theory is to be supported. For instance, an assessment of the relative frequencies of shed and butchered antler might help to elucidate the role played by hunting - and hence hunters - in antler collection. Moreover, even if feasible for Iron Age Scandinavia, its wider applicability is limited (see

MacGregor 1992a), particularly as the greater part of combmaking waste debris has been found in towns (e.g. O' Riordáin 1976a, 1976b; Ulbricht 1978, 1980; Ambrosiani 1981; Flodin 1989; Ros 1990; MacGregor and Mainman 1999; Hurley and Scully 1997; Smirnova 2005).

Ambrosiani (1981) strongly argued against the 'part-time' scenario. For her, Viking Age combs were produced by itinerant workers. The uniform nature of the shape and decoration of combs between early medieval western Europe and European Russia does, as Ambrosiani suggests, demonstrate close links across the region. Indeed, on a smaller scale, the similarity of comb forms at Whithorn (see below) to those in Ireland may suggest the presence of an 'Irish Sea circuit' in which itinerant workers were active, though craft in Whithorn itself has been interpreted as of a more settled urban character (see Nicholson 1997: 495).

Ambrosiani went on to claim that the number of scattered excavations of comb manufacturing deposits suggests that these objects were produced at a number of places, rather than at a few specialised production centres. Furthermore, none of these excavations - even those with voluminous corpora such as Haithabu (Ulbricht 1978) - can offer support for long term dedicated workshops. She believed that the craftsmanship that a composite comb represents demonstrates that their makers were indeed full time, professional specialists, rather than multi-skilled artisans. Thus, for Ambrosiani, the only explanation was that these deposits represent the waste from temporary production, perhaps around market days, of an itinerant comb-maker.

#### **2.4.2 The 'Itinerant Craftsmen' model: a response**

On first reading, Ambrosiani's overall argument is rather compelling, but some of her claims do not stand up to close scrutiny (table 2.5). For example, her division of combs into 'A' and 'B' types, with different ultimate origins and periods of circulation, is used to support her 'itinerant traders' proposition. Leaving aside any problems with the typology itself (see section 2.1 above), her logic is not always clear. Given that she believes A and B combs to emanate from 'northern' and 'southern' centres of distribution respectively, and that she sees them as more or less chronologically discrete, she suggests that if they were dispersed via long range exchange, then one must accept

that there was a reversal of the southward trade stream sometime around the tenth century (Ambrosiani 1981:38; fig. 2.7c and 2.7d). She believes this extremely unlikely, but such shifts are not historically unknown, and we know that the politics and economics of the period were dynamic and mutable (Hodges 1982). Moreover, the model hangs upon hypothesis (Ambrosiani's identification of 'centres of origin') and lacks any real evidential basis.

Nonetheless, one might argue that the nature and distribution of waste deposits, together with the ostensible pan-European similarity of comb form does lend *some* weight to Ambrosiani's theory. Though it is possible that combs were distributed via long distance trade, Ambrosiani deemed it unlikely that the broad uniformity of combs and the rarity of local variants were simply products of a widespread European fashion. For Ambrosiani (1981:38), the large number of sites at which manufacturing waste has been found argues against the dominance of such inter-regional exchange. She points out that to view comb distribution as the result of phenomena other than long-range trade or itinerant craftsmanship is to invoke the action of some powerful influence, controlling the form and ornament of these objects (Ambrosiani 1981:40). She suggests that such a situation is unlikely, and that much more evidence would be needed to merit such a proposal.

However, deeper understanding of the nature of the trade may be occasioned through analogy with other, better-studied crafts. In particular, one is drawn to similarities with the distribution of decorative metalwork (Skre and Stylegar 2004: 55). Like combs, oval brooches were produced at a number of centres, but were then distributed widely throughout the 'Norse world'. Their form and ornament are homogeneous across a large area (Graham-Campbell 1980: 27-28; Graham-Campbell 2001: 115-116; Jensen 1991: 31-35; Høilund Nielsen 2004: 63-65), and yet these artefacts are understood as mass-produced goods intended for a pan-European market, rather than being the products of a network of itinerant smiths (see Jensen 1991: 43).

In more general terms, Ambrosiani did not consider fully the relationship between towns and their hinterlands, and her theory seems a little too straightforward and all-encompassing. Surely, even if itinerant combmakers did exist, there was some

geographical or chronological variation in the nature of the craft. For instance, the presence of both antler and combs in Shetland and Gotland, where deer are not native (see Berry and Johnston 1980; Lietha 1997), suggests that they were brought in from overseas (see Barrett 2003a: 80). It is important that one fully considers the possibilities of their introduction via merchants, itinerant craftsmen, or as personal belongings of settlers, before resting on a convenient explanation.

Neither was Ambrosiani explicit about the scale at which she believed itinerant trading to have worked. One would assume that she does not propose that a single combmaker's 'patch' traversed the North Sea, but such a scenario must be invoked if itinerancy is to satisfactorily explain the supposed similarity of combs '...between Staraja Ladoga in the east [and] Dublin in the west...' (Ambrosiani 1981: 40). Thus, it seems that even if combmakers *were* working on an itinerant basis in both mainland Europe and the British Isles, some other 'diffusion mechanism' must be invoked in order to explain their presumed similarity.

Perhaps the key point is that Ambrosiani's argument is, by its very nature, based on negative evidence. It is problematic to take the failure to find permanent workshops in Viking Age levels as an indication that such workshops did not exist, as the absence of evidence might relate to taphonomic processes or the cleaning out of properties. Indeed, while it is clear that none of the deposits analysed to date represent the entire body of waste produced by full-time, permanently situated comb-makers resident for several generations (Ulbricht 1978; Ambrosiani 1981; MacGregor *et al.* 1999a), one must consider the evidence that the uses to which Viking Age town plots were put often changed; perhaps as tenants came and went (*e.g.* Mainman and Rogers 2004: 481-482; Nordeide 1992: 145; Christophersen and Nordeide 1994: 309-311). Moreover, there is a considerable possibility of waste removal and redeposition offsite. With this in mind, it is notable that it is not uncommon for these sites to be situated near riverfronts (*e.g.* *Fishergate*, Rogers 1993; *Ribe*, Ambrosiani 1981; *Trondheim*, Christophersen and Nordeide 1994), and there are many medieval documentary references referring to the disposal of waste in waterways.

Given these confounds, the quantitative calculation of the level of comb production seems uninformative (*e.g.* Christophersen 1980b:154; see criticisms by Ambrosiani 1981:

42-45 and Christensen 1987:14). Furthermore, it may be that the basic criteria for recognising workshops are inadequate, leaving combs themselves as the only informant as to the organisation of their manufacture.

If the argument's basis in manufacturing debris is weak, so are Ambrosiani's comments regarding the diversity of comb morphology. The homogeneity of the European corpus has yet to be demonstrated in detail (see Chapters 7,8 and 9), while related arguments for itinerancy, such as the spatial separation of 'identical' combs (*e.g.* Hansen 2005: 158-159, 180-184; *cf.* Christophersen and Nordeide 1994: 311) are inconclusive. If form and ornament displayed a limited range of variation, and manufacturing methods were regionalised (see below), then attempts to recognise individual craftsmen are unfounded.

The only way to address the reality or otherwise of this perceived uniformity is through studies of individual corpora. If the presence or absence of local variants could be verified or questioned, this would have serious implications for the applicability of Ambrosiani's model. While local or regional differences in form and ornament might be indicative of consumer preferences, variations in method of manufacture could be used to identify 'technocomplexes' (after David 2003a), which might relate to either settled workshops or mobile 'schools'. Another key to the problem might lie in the relationship between hornworkers and bone and antler workers. As one may assume that the hornworking industry was necessarily sedentary from the outset, given that fresh horn had to be soaked in pits for prolonged periods (MacGregor 1989: 112), a combination of roles might suggest that bone and antler-workers also carried out their craft in settled workshops. While the co-occurrence of hornworking and antlerworking waste has proven elusive, there is evidence for the manufacture of combs that incorporated both bone and horn (see Chapter 6).

### **2.4.3 A reanalysis: regional variation?**

In general, there has been a lack of attention paid to variations in method of manufacture as deduced from combs and waste. While several workers have discussed the techniques involved in the production of a composite comb (*e.g.* Ambrosiani 1981; Galloway and Newcomer 1981; see also Chapter 1, this thesis), and much has been written about the widespread similarity of combs across Europe and European Russia (see for example Ambrosiani 1981; MacGregor 1985; Dunlevy 1988), much less

attention has been focused on differences. It is a truism to suggest that Viking Age single-sided composite combs are outwardly very similar in terms of form and decoration. However, the recognition of small variations related to different manufacturing techniques might be important, as such contrasts may relate to different schools or traditions of comb-making.

There are particular hints of distinctive regional manufacturing traditions in the choices of rivet materials. At Birka, Ambrosiani A combs are always fixed with iron rivets, while B combs and later forms tend to be secured with copper alloy. Conversely, in broad terms, Ambrosiani B combs seem to be uniformly fastened with iron rivets in the British Isles, and though in Norway later types usually use copper alloy rivets, in England and the Irish Sea region iron is the norm. Thus, one begins to identify regional differences, but it is unclear whether these relate to local traditions or differential access to raw materials. The situation becomes clearer when one also considers riveting *technique*.

It is recent work by Lyuba Smirnova that has proved most enlightening in this respect. In her study of comb-making in medieval Novgorod, she notes a marked chronological shift in riveting practice (see Smirnova 2002a: 34-39; fig. 2.15). In the earliest phases, the common practice is to secure each billet by riveting through its centre; a pattern known from Gotland and Birka, and which Smirnova thus dubs the Eastern Scandinavian tradition. However, from the late tenth century onward, although endplates are often riveted through their centres, in general rivets are placed at billet junctions; a pattern common between the Baltic and the British Isles, and termed a Western Scandinavian tradition.

In reality, the pattern is probably more complex than this. Understanding such variation is the key to gaining insight into the problem of the wide, apparently uniform distribution of combs in Viking Age Europe. With this in mind, **table 2.6** details the major European trends in rivet material and fixing technique. Though convenient, this summary rather conflates chronological variability. Nonetheless, riveting placement is clearly regionally variable, if not consistent through time at any given site. The earliest combs (Ambrosiani A combs) from the Trøndelag region of Norway are fixed with iron rivets, using the 'every edge' technique. However, the earliest levels from the city of

Trondheim, which probably date to the late tenth century, contain combs fitted with copper alloy rivets. While in the lower levels the 'central' and 'every edge' techniques dominate, as one moves up through the sequence the use of rivets becomes increasingly frequent and ostentatious. In detail, closely-spaced rivets first become important in phase 4 (late eleventh century), though Flodin's scheme does not allow chronological analysis of rivet position at any higher resolution. Although it was not possible to study the corpus in person, the situation seems to be slightly different at Bergen, where 'decorative' riveting is preceded only by the 'central' technique (manifested in the absence of Wiberg's type E2, see Hansen 2005: table 59). Thus it seems that at least some of the combs found at Trondheim were manufactured according to a tradition not recognised at Bergen. The combs from later levels are more difficult to distinguish in a literature survey, given the use of decorative riveting.

However, the Novgorod collection presents a clear example of diachronic patterning in riveting technique. Smirnova notes that the chief concern relating to rivet placement in Ambrosiani A combs at Novgorod seems to have been aesthetics, rather than with whether the rivets fit through billet edges or centres (Smirnova 2005: 87). In the first B combs, rivets were fixed in a similar way to those of A combs, but from Smirnova's 'Second Period', there was a move towards edge riveting (primarily 'every edge' but with some examples of 'alternating edge'). In later types, a variety of patterns are noticeable (Smirnova 2005: 254-257). In the twelfth century, the most common pattern was a single row of widely-set rivets, but this configuration became less common with time, as other styles increased in popularity. From the mid-thirteenth through to the end of the fourteenth century, a pattern of two offset rows of widely-set rivets dominated, while vertically paired rivets were never dominant, but more common in the late-thirteenth and early-fourteenth centuries. However, perhaps of most interest, given their common occurrence at Trondheim (and in the Northern Isles; see Chapter 8), is the restriction of combs with rows of very closely-set rivets to late-twelfth and early-thirteenth-century contexts.

#### **2.4.4 Work in England and Scotland**

Analyses paying particular attention to method and quality of comb manufacture in the British Isles have been rare, and have been largely restricted to finds from individual

sites (e.g. Pritchard 1991: 195 ; Riddler 1991). Nonetheless, there are a few important syntheses.

The seminal study of English comb manufacture is that produced by Arthur MacGregor (1989; 1992b; 1998), in which consistent trends in the use of raw materials were clearly defined, allowing consideration of the organisation of the combmaking craft. For MacGregor, the period between the Viking Age and the later medieval period saw a clear change of emphasis from material-based production (in which bone- and antler-workers made a range of objects) to product-centred industry (characterised by specialist combmakers, exploiting wood, bone, ivory, and horn). While archaeological evidence for this observation is fairly satisfactory, MacGregor himself (1992b) has pointed out historical references that run counter to his thesis. Contemporary references can be interpreted as suggesting that the pre-conquest comb industry was also product based, with the combmaker working equally in bone, antler, and horn (Dunlevy 1988: 345). The trend towards a more product-based craft/industry may thus be a matter of degree.

Whatever the precise level of specialisation through time, MacGregor has demonstrated that there was a well-organised infrastructure for the supply of raw materials, the production of finished objects, and possibly also the repair and maintenance of used objects. Bone could be acquired from butchers and skinners (as cooked bone would be unsatisfactory for working), and this has led MacGregor to suggest interaction between various animal-based industries (MacGregor 1998). Antler would have been harder to come by. As much of the material found at manufacturing sites in England is shed, rather than butchered antler (MacGregor 1985: 35), its collection would have constituted considerable expenditure of time and effort. Rather than the travelling combmaker collecting material as he passed through the countryside, or acquiring new stocks once he reached a market at which he could set up a temporary shop (Ambrosiani 1981; Christophersen 1980a), the situation is most easily explained if the combmaker was permanently based in the area, and was thus party to local knowledge.

#### 2.4.5 Synthesis

This review has highlighted the potential of new methodological techniques, but also impacts upon current discourse in the study of combs. From a methodological

standpoint, it has been shown that riveting techniques and materials have the potential to inform one's knowledge of manufacturing practices, to enable some level of 'sourcing' and, ultimately to elucidate the means of comb distribution. The analysis of such phenomena, together with other indicators of production methods, will be applied in this study to the collections from northern England and Atlantic Scotland (see Chapter 4).

As for the state of contemporary discourse in comb studies, it has been shown that the 'itinerancy' debate is no longer a useful quarry. On a local level, itinerancy almost certainly occurred, as craftsmen moved between plots, markets, and perhaps settlements of different sizes. In contrast, there is little evidence for such movement on the regional and inter-regional scale, and trans-North Sea itinerancy is unsupported. Moreover, such a model is neither necessary nor adequate to explain the (perceived) uniformity of European combs. This leaves Ambrosiani's model largely redundant, at least in a British context. Combmakers, whether sedentary or itinerant, may have worked to locally distinctive patterns (see Chapters 7-9). This means that combs have the potential to inform one's comprehension of identity and culture contact, and it is to these areas that one's attention is now drawn.

## 2.5 Combs and Identity

The potential of combs to elucidate identity is yet to be fully exploited. As we have seen, many studies have focused on the combmaking *craft* (e.g. Ulbricht 1980; Ambrosiani 1981; Flodin 1989) and its potential as a proxy for industry in early towns in more general terms (e.g. Christophersen 1980a). These studies have tended to acknowledge the cultural significance of combs, sometimes even as an implicit justification for their study (e.g. Ambrosiani 1981: 13-15), but analysis of their use or social role has rarely extended beyond such preliminaries.

Indeed, interpretations of combs in relation to identity have often been implicit. Early studies of artefacts from sites in England directly conferred upon combs labels such as 'Danish' or 'Norse', though it is unclear whether this was intended primarily as a chronological term or as an ethnic descriptor (e.g. Waterman 1959). Moreover, the

direct relationship between a comb's form and the identity of its owner was rarely discussed.

This ambiguous approach has survived largely intact, such that ethnically- and culturally-loaded terminology is pervasive. For instance, in her discussion of the combs from medieval Winchester, Galloway identifies one comb as 'Celtic', while a number of others are seen as relating to a 'North Sea' province, and, more directly, to 'Danes in the city' (Galloway 1990a: 666-667). Similar terminologies persist in Atlantic Scotland, where the term 'Late Norse' has been used to describe particular late tenth to fifteenth century combs and related material culture (Hamilton 1956; Curle 1982; Batey 1987; Clarke and Heald 2002). Though the term is employed primarily as a chronological descriptor, it is nonetheless ethnically and culturally suggestive. To label these combs 'Norse' is to make unfounded assumptions about the identity of their owners, and the term is best abandoned, at least in regard to combs.

However, the 'ethnic' monikers assigned to some combs *have* been the subject of some detailed discussion. In particular, a number of investigations have sought to use spatial distributions to establish the geography of comb development, and to reassess the accepted provenances and nomenclature of certain types. The question of Saxon or Frisian 'origin' has been posed in relation to a number of comb types (MacGregor 1975; Hills 1981; Riddler 1990), though it is never clear whether one is investigating the original place of development of a latterly more widely produced form, a centre for the manufacture of exportable combs, or a 'homebase' for the people that made, traded, and/or used them.

Where 'identities' have been more explicitly stated, approaches have tended to the traditional, rather than being driven by contemporary theory. Indeed, the direct assignment of comb forms to ethnic or cultural groups has been a particular feature of many studies. For instance, Curle's (1982) description of the material from the Brough of Birsay (Orkney) uses formal characteristics to characterise combs as 'Pictish', 'native', or 'Norse', thereby laying the foundations for protracted debate on the subject of the mixing of these types within phases (Chapter 9). In contrast, relatively little ethnic interpretation has been attempted for the tenth to eleventh-century combs of England, Ireland and Scandinavia, given their perceived uniformity. Nonetheless, combs have

been seen to fit within a broad 'Scandinavian' tradition (e.g. MacGregor *et al.* 1999: 1939).

Smirnova's (2005) study of the combs from Viking Age and medieval Novgorod sought to associate chronological patterning in formal attributes with regional 'norms' of manufacture, and even with particular ethnic, religious, or social groups (such as 'Christians' or 'Varangians'). This work was ambitious in its scope, but recent debates regarding the constructed nature of identity seem to have influenced it little, and Smirnova saw combs as reflectors - rather than mediators - of identity (e.g. Smirnova 2005: 102-105).

Indeed, the implication of many of these studies is that combs can be seen to have their own 'ethnicity'. Such an approach is simplistic, and at variance with the 'negotiated' identity proposed by Barth (1969) and Jones (1997) (see Chapter 3). However, it would be wrong to characterise the present work as heralding an entirely new approach to the study of combs and identity, as there are some exceptions to this orthodoxy. Perhaps the most ambitious - if contentious - investigation of the utility of combs in the active construction of identity is Clarke and Heald's (2002) discussion of the relationship between comb form and regional identity in medieval Atlantic Scotland. The authors highlighted perceived spatial patterning in the occurrence of combs with distinctive formal characteristics, and suggested that it related to regional differences in consumer choice. In addition, they pointed out a number of combs that displayed what they saw as *ichthyomorphism*. Treating this phenomenon as explicitly symbolic, they tentatively assigned these combs to wealthy commercial fishermen. While the findings of their research may be refuted on various grounds (see Chapter 8), Clarke and Heald's attempt to move the study of combs 'beyond typology' is laudable, and paves the way for further investigations into their role in the creation of identity.

## 2.6 Conclusions

The scope of this review has demonstrated the existence of a number of trends in the archaeological study of combs. For many, these artefacts have been of interest primarily as chronological tools, and where associations have been made between combs and particular cultural, ethnic, or social groups, the approach has been invariably traditional,

and frequently implicit, rather than openly stated. Where there has been interest in combs in and of themselves, there has been a fixation on the logistics of comb production and distribution, rather than their uses, life histories, or role as mediators of social relations.

It is clear that the accepted model for comb production can no longer be supported in its present, pan-European form. Although originally developed within the context of a vigorous debate (see Ulbricht 1978; Christophersen 1980a; Ambrosiani 1981), the 'itinerancy' model has become something of an implicit consensus over the last 25 years. The homogeneity of the European corpus has been emphasised, while regional variations have been overlooked or downplayed. As a result, Viking Age corpora have only rarely been interrogated in recent years, and the few large studies have focused on *diachronic* change (e.g. Smirnova 2005). Indeed, the model has shaped the way in which archaeologists think about combs, encouraging a focus on scale of production and the semantics of 'handicraft' and 'industry', and drawing attention away from issues such as style and identity.

The present work will attempt to redress this balance, by exploring the role of combs in the expression of identity (though the issue of trade will be briefly returned to later in the thesis, in discussing the mechanisms by which stylistic attributes may have been dispersed). In order to move beyond questions of trade and scale of production, the work must be situated within a clear theoretical context (chapter 3), and a robust methodological framework (chapter 4).

## Chapter 3: Theoretical Review and Approach

This chapter outlines the theoretical framework of this thesis, and situates it within current archaeological debate. Thus, as a first step it is necessary to characterise the current academic climate, paying heed to important theoretical developments germane to this research. Three interconnected strands are discernible, and these provide the structure for this section. First, the construction and applications of typology, and the study of style are considered. This is followed by a review of the ways in which archaeologists may attempt to understand ethnicity, identity, population movement and culture contact. The third area of discussion concerns the ways in which past trade and exchange may impact upon our interpretations. In closing, these reviews are synthesised into the overarching approach that is adopted in this research.

It is not my intention to toe any particular theoretical line, but to study a range of ideas and, where compatible, apply them in combination. Such an approach is open to criticism if it manifests itself as poorly considered eclecticism (see McGuire 1992: 7-8). However, herein I do not propose to apply theory irrespective of logical compatibility; rather the goal is to apply single, coherent theoretical constructs to distinct aspects of study. For example, the theoretical constructs that may best help one to understand inter-regional and long range trade may be inappropriate to studies situated within a narrower frame of reference, such as that of the individual's expression of identity. If such disparate theories may be brought together as part of a single, coherent framework, it may considerably broaden our understanding of a variety of issues, and how such issues relate to one another.

### 3.1 Style and Typology

The archaeological use of typology has a long history (*e.g.* Montelius 1903; Petersen 1928; Thomas 1960; Swanton 1973; Dickinson and Härke 1992; Fanning 1994; Williams 1997), and arguments concerning the nature, construction, meaning and applications of typology have raged since early in the development of archaeology (*e.g.* Krieger 1944; Ford and Steward 1954; Sackett 1977, Brown 1982; Binford 1989). From an early interest in types for their own sake (Ford 1954: 43) and their relationship with monolithic cultures (Nelson n.d.,

cited in Krieger 1944: 273-274), through debate over the practicalities of the typological process (Binford 1965; Brown 1982: 179-180; Adams and Adams 1991: 27) to consideration of their 'reality' and 'meaning' (Kluckhohn 1939:338; Steward 1954: 57), there has rarely been consensus.

However, at the present time, typological discussion occupies a position far from the frontline of debate in archaeological theory. To some extent, the situation may stem from the self-imposed isolation of some of those concerned with the typological method. For instance, Brown (1982: 187) claims that the lack of a coherent archaeological theory is to blame for the absence of a place for typology within it, while some have commented that the 'Typological Debate' has become so quagmired in theory that it is no longer has practical relevance (*e.g.* Adams and Adams 1991; *cf.* Brown 1982: 178). Equally, however, the circumstances may have arisen from an outside perception that the practitioners of typology were following an outmoded, objectivist, agenda. This may have been true to some extent; Adams and Adams (1991: 278) for example, propose that to view typologies as 'natural' or 'artificial' is to create a false dichotomy, and that 'naturalness' is irrelevant to utility. The scholarly environment created through a concern with practice, rather than theory, has, nonetheless, had some positive results. Thanks largely to the development of increasingly sophisticated software packages, investigations into the utility of seriation as an archaeological tool have flourished (*e.g.* Kjeld Jensen and Høilund Nielsen 1997; Hines *et al.* 1999). In addition to generating chronologies based upon grave groups (*e.g.* Høilund Nielsen 1999; Hines 1999), a number of studies have considered individual classes of artefact, using correspondence analysis to investigate the relationships between discrete formal and ornamental attributes (*e.g.* Axboe 1999). This approach shows considerable potential, and will be adopted later in the present work (see Chapter 4).

Increasingly, however, archaeologists are appreciating the importance of a 'softer' approach to typology (see for example Blinkhorn 1997; Smirnova 2002a). Moreover, a fascination with ethnography since the 1960s has spawned an awareness of the potential of analogy to assist interpretation in the use of *style* (see Glossary) in artefacts (*e.g.* Carr and Neitzel 1995). Style has alternately been seen as passive (*ie* latent and unconsciously created) or active (formed as an intentional act), and has been divided into purely symbolic ('iconological'), or

decision-based ('isochrestic') categories (see in particular Sackett 1977; cf Binford 1989; Jones 1997: 112-116). However, the real breakthrough came in the 1970s and 1980s, when style was recognised as *communication*.

Polly Weissner's (1983) study of Kalahari San projectile points is a particularly good example of this research. Weissner systematically examined these artefacts, and used them to propose generalising theories relating to what she termed "stylistic behaviour". She maintained that the relationship between material culture and social information was complex. Following Barth (1969), her analysis demonstrated that style was most effective in expressing group membership under stressful conditions (Weissner 1983: 271; cf Parker Pearson 1982; Wason 1994). She also felt that the choice of an artefact used in style followed some basic, predictable rules, but found that style existed in a wide range of *attributes*, both functional and non-functional, and that choice of these is more difficult to predict. Most interestingly, she noted that 'no single attribute consistently carried information about particular levels of society or difference' (Weissner 1983: 270).

For Weissner, style could be divided into *emblemic* (associated with the existence of groups) and *assertive* style (associated with the person, and conditioned by social interaction). While emblemic style tended to use recognisable symbolism to communicate specific messages regarding group membership, she argued that only the more subtle and mutable assertive style was informative as to interaction and contact across group boundaries. Both forms could occur on a single artefact, and different attributes on the same item could simultaneously carry different social messages. Thus the transmission of identity-related information is seen as infinitely complex and variable, yet something which we may begin to understand through scrupulous analysis. The potential for the use of Weissner's approach in the study of personal items in the early medieval period is obvious, though it has been criticised for its lack of consideration of the *means* by which identity is produced (see for example Jones 1997: 116).

Thus, in recent years workers have attempted to situate style within a more cognitively-centred approach. Style is seen as a creator and mediator of social relations, rather than either a mere reflection, or a functioning component of an all-embracing system. Pierre

Bourdieu's (1977) philosophy of action (particularly his concept of *habitus*), and Anthony Giddens' (1984) structuration theory have been of particular value.

Bourdieu's *habitus* is a construct that allows us to understand human actions. It stems from an individual's innate understanding of society, and their disposition to act in certain ways in certain situations. Importantly, this disposition is subsequently modified by human experience, so that our actions are not controlled by the habitus as much as conditioned by it, ceaselessly adapting to the situation at any given moment (see Robbins 2000: 26-29).

Often compared to Bourdieu, the work of the British sociologist Anthony Giddens (1984) is worthy of consideration. His ideas are somewhat eclectic, leaving his work open to criticism (see Craib 1992: 31; cf. McGuire 1992: 7-8). Nonetheless, this approach has provided interesting descriptions of society, and may have considerable archaeological utility. Like many modern social theorists, Giddens is interested in the duality of social structure (*i.e.* whether we should prioritise agency or structure as a subject of discourse). He proposes that these phenomena are merely two sides of a single coin, and that their articulation produces *social practice* or *praxis* (a term borrowed from Marxist philosophy). Social practice gives rise to *structuration*: the 'production, reproduction and transformation of structures' (Craib 1992: 43-44). These structures are fundamental to the maintenance of power (Giddens refers to structures of signification, domination and legitimation); they are both produced by human action, and are the medium through which people are able to act. This duality is the central tenet of structuration theory.

Thus, human agency involves following rules that we may be unable to explicitly formulate, but that we nonetheless understand implicitly. This might be compared with Bourdieu's concept of having a 'feel for the game' (Bourdieu 1998). However, in both cases, our behaviour is not governed by such rules; they are simply the *medium* through which we act. In this way, agency may be seen as transformative and communicative (see Craib 1992: 35-36), and for Giddens the most important aspect is our freedom to choose to follow or break the unspoken rules of social conduct.

Giddens was particularly influenced by philosophical ruminations on time and space (see Craib 1992: 30-31). Thus, social practice is seen to bind temporal and spatial dimensions through its occurrence within *locales*, inside which action is *regionalised* in both time and space. *Locales* are constituted through the articulation of human action and material culture, and as such are archaeologically identifiable through the recognition of meaningful associations between space, artefacts, and architecture. John Barrett (1988) has called for an end to the separation of studies that focus on time or space, and the *locale* has subsequently become the central foundation of the archaeological analysis of social space (see for example Giles 2000; Milek 2001).

Effective as these investigations of social space are, an interest in the relationship of structure and action is clearly also germane to the study of identity and *things*. Indeed, Bourdieu's and Giddens' ideas have been applied with equal success to studies of material culture (e.g. Blinkhorn 1997; Dobres 2000), while the related concepts of *materiality* (e.g. DeMarrais *et al.* 1996; Jones 2002) and *cultural biography* (e.g. Thomas 1996; Gosden and Marshall 1999; see below) have also proven popular and instructive.

A discussion of the application of such an approach to the material culture of the early Middle Ages is given by Paul Blinkhorn (1997), in an outline of the potential of Anglo-Saxon domestic pottery. It is Blinkhorn's belief that the prime reasons for the enigmatic nature of this material relate not to the character of the medium itself, but to the questions that have been asked of it, and to the techniques that have been utilised (*contra* Brown 1982: 178). Blinkhorn denies the division of Anglo-Saxon pottery into functional and symbolic groups, suggesting that even the most basic of domestic ceramics were imbued with meaning. Specifically, he invokes Bourdieu's (1977) concept of *habitus*, and suggests that its rôle in structuring behaviour may be evident in both form and fabric.

These interpretative, style-based approaches hold great explanatory potential, viewing style as meaningfully constituted, and playing an active rôle in the construction, manipulation and negotiation of identity. Blinkhorn (1997, and the examples he cites) show that even the most everyday objects were often used to broadcast social and cultural identity. It is

particularly notable that Blinkhorn found potential for understanding the *habitus* in both form and fabric, as this may be analogous to style and raw material in combs.

It is likely that different forms of material culture work together in forming and communicating identity (e.g. Richards 1992b; Blinkhorn 1997). Nonetheless, the *habitus* may only be accessed or interpreted through detailed analyses of individual classes of artefact. Any attempt to understand such nuanced, multi-layered communication is fundamentally dependent upon a rigorous approach to data collection and analysis. Seriation and the typological method sit well within such a framework, as they are dependent on a large dataset, and are employed in order to identify structure expressed in the occurrence of discrete attributes (see Chapter 4). The analyst must of course be aware of the 'constructed' nature of types, and that analysis does not stop at the production of a classification. Rather, correspondence analysis may be used to identify multiple structures within the data, allowing a number of possible interpretations. Thus, typology and interpretative theory are not inherently conflicting, and if approached cautiously and critically, together they facilitate inference that is both imaginative and data-grounded.

### 3.2 Ethnicity and Migration

Building upon these stylistic bases, it will be possible to use combs to elucidate the process of migration, and the communication of identity. As portable objects that are potentially regionally-distinctive, they may be used to track travel, trade, and population movement. However, it will be seen from the following that material culture rarely directly reflects the presence, movement, or behaviour of ethnic groups, and a more sophisticated approach is called for.

Indeed, the phenomena of ethnicity and migration are closely intertwined (see Trafford 2000: 26), and a grasp of both issues is important if we are to begin to comprehend culture contact in a given context (such as Viking Age England and Scotland). The historiographies of the archaeological study of ethnicity and migration have been well covered in Anthony's (1990) excellent article and Jones' (1997) volume, and it would be

unproductive to rehearse them in detail herein. However, in order to fully appreciate these concepts, some understanding of their development is required.

It is well known that the beginnings of the study of migrationism lie in culture-history, (see Childe 1925; Kluckhohn 1939; Grünert 2002: 71-100). The most famous expressions of the early medieval application of this school of thought relate to the politics of the Migration Period (*e.g.* Leeds 1912; Stenton 1943), but similar approaches were prevalent in the study of the Viking Age (*e.g.* Sawyer 1962), and continued to have currency for some time (*e.g.* Brøndsted 1973; see Trafford 2000). Since the 1940s, Anglo-American archaeology has seen something of a 'retreat from migration' (Adams *et al.* 1978), in contrast to the consistent position of similar studies at the forefront of enquiry in fields such as geography and demography (Ravenstein 1885; Rogerson 1984; Massey *et al.* 1993; Lucassen and Lucassen 1997; Castles and Miller 1998). The reasons for this demise have been subject to some debate (Adams, *et al.* 1978; Kristiansen 1989: 211-212; Chapman 1997; Härke 1998.), the key factors being the association of archaeology with the actions of the Nazis in the 1930s and 40s, the dominance of processualist principles within archaeology (see Anthony 1990; Burmeister 2000: 539), and a lack of the requisite theoretical and methodological equipment with which to tackle the subject (Anthony 1990: 895; although see Clarke 1968: 411-431).

However, sometime during the 1980s the subject began to re-emerge (*e.g.* Bettinger and Baumhoff 1982; Rouse 1986). In turn, since 1990 there has been a more perceptible shift in thinking (*e.g.* Anthony 1990; 1992; Myhre 1991: 176; Chapman and Hammerow 1997; Jones 1997; Burmeister 2000), as the relevance of migration and identity in the modern world began to be translated into archaeological terms (see Anthony 1990: 897).

Nonetheless, Anthony's (1990) critique - relating to the naivety of archaeologists in dealing with migration - still seems pertinent even today (*e.g.* Burmeister 2000). Anthony's primary criticisms related to an unhealthy fascination with the methodology of migration recognition (as opposed to theoretical analysis of the *nature* of migrations), an ignorance or dismissal of the tools used by geographers and others in the study of modern migrations (see for example Trafford 1997: 11), and a preoccupation with the identification of the *causes* of migration. Anthony believed that the best way forward was to use whatever tools

we could to look at the fundamental structure and mechanics of population movement. This might then lead to the identification of economic or political conditions that encouraged such behaviour. Moreover, criteria for the recognition of migrations in the archaeological record might then be defined.

Indeed, it is important that we consider models from outside of archaeology (see for example Ravenstein 1885; Massey, *et al.* 1993; Castles and Miller 1998; Castells 2000). Such an approach allows us to step beyond simplistic understandings of population movement, and facilitates the consideration of 'push' and 'pull' factors, as well as the importance of transport costs, efficiency of information exchange, and other dynamics (see Anthony 1997). However, in so doing, it is not necessary to impose any sort of cross-cultural model; rather it is important that we realise the role of historical contingency and context-dependent variability (see Kristiansen 1989: 212).

Moreover, if migration studies are to be taken seriously in archaeology, then they must be stripped of the baggage of culture history. For instance, it is no longer appropriate to consider particular types of material culture as indicative of the presence (or the numerical dominance of) a particular 'race', 'people' or 'culture' (see below). A much more sophisticated approach is necessary, in which the manipulation and redefinition of signalling through material culture are considered.

Thus, an understanding of terms such as ethnicity and identity is fundamental (see Glossary). Although such issues have long been grappled with, particularly in the anthropological literature (*e.g.* Binford 1965; Barth 1969: 11-13; Sackett 1977), it was some considerable time before these distinctions were taken on board by many archaeologists (although see Trigger 1978: 122-131). This was particularly true in the study of the medieval period, where connections with history were still strong (see Austin 1990).

Nonetheless, by the end of the last century the importance of such distinctions was widely recognised by academics on both sides of the Atlantic (Barth 1994; Wolf 1994; Jones 1997). Thus, it is now clear that no direct connection between material culture and ethnicity can be made (see Burmeister 2000: 541; also Austin 1990: 16-17). This awareness of the *constructed*

nature of ethnicity provides a starting point from which a more explicit study of migration may be undertaken. Nonetheless, as Barrett (2003c: 4) has pointed out, confusion and conflation of biological, linguistic, cultural and ideological groups persist (see for example Härke 1992; Helgason *et al.* 2001; see also Trafford 2000 for a discussion).

The concept of ethnicity is elusive, but it is possible to divide its many students into two schools. Some have followed the *primordialist* perspective, which characterises ethnic identity as something innate and unchanging, a fundamental component of 'who we are' from birth (Jones 1997: 65). The opposing *instrumentalist* viewpoint sees ethnicity as a construct that is inherently flexible, and predisposed to manipulation by outside influences (Jones 1997: 73).

Fredrik Barth played a major rôle in the development of the study of this enigmatic concept. One of his most important observations was that ethnic distinctions did not require isolation for their persistence; rather that social interaction actually fostered the perpetuation of cultural differences (Barth 1969: 10). The fundamental characteristic of ethnicity is that it is *ascribed* by people, rather than being an objective, indisputable fact of nature. Thus, it follows that it is the boundaries between groups, and the maintenance of such boundaries, that are of interest to anthropologists (*cf.* Said 1978).

The Barthian imprint has been visible in archaeological studies of identity since at least the 1980s. Odner's (1985) work on ethnicity in Scandinavia and northern Europe provides one example. Odner considered the *reasons* for the formation of Saami identity, rather than focusing solely on temporal and chronological issues. He suggested that Saami ethnicity developed in response to stress caused by a perceived increase in pressure on resources during the Roman Iron Age. While Odner might be criticised for his concentration on economic issues (see Olsen 1985: 13), his assertion that Saami identity was *created*, rather than simply existing, represented a significant step forward in the archaeological understanding of ethnicity.

Indeed, Barth's interpretations of identity have engendered continuing archaeological interest in issues of ethnicity, cultural signalling, assimilation, acculturation and culture

contact (e.g. Graves-Brown *et al.* 1996; Hadley and Richards 2000; Barrett 2003a). His use of the concept of agency has proven particularly influential, as through it one is able to recognise the articulation of style (section 3.1 above) and identity (section 3.2) (e.g. Carr and Neitzel 1995). For these reasons, agency is fundamental to any study of the relationships between individuals and material culture, the present work included.

In her 1997 book 'The Archaeology of Ethnicity', Sian Jones formalised an archaeological approach built upon Barth's work, and this has been greatly influential. Jones clearly sees the primordialist perspective as overly deterministic, and insufficiently precise, while its historical basis is poorly understood (see Jones 1997: 65-72). Conversely, instrumentalist approaches are often reductionist, dominated by considerations of political and economic gain, and fail to help us understand the cultural and psychological facets of ethnicity (Jones 1997: 72-79). Moreover, Jones sees this opposition as unhelpful and, employing Bourdieu's (1977) concept of *habitus*, attempts to navigate a middle way. Ethnic identity is thus self-defined (Barth 1969: 24), and is subject to manipulation and reconstruction. However, it is not arbitrary; it is founded in a set of values and dispositions through which the world is understood, and in which early experiences have particular importance. Such an understanding allows us to realise the importance of agency, thus sidestepping the reductionist problems of both functionalism and culture history. Moreover, while there is great variation in how style and material culture are used in the construction and perpetuation of identity in space and time, '*...it is not random within particular socio-historical contexts*' (Jones (1997: 125, italics in original)). Thus, any understanding of ethnicity in a particular case requires detailed background knowledge of that context (*cf.* Hodder 1991a).

One may note the conceptual similarities between the idea of a *constructed* identity, and that of a *communicative* style (section 3.1). The possibility of articulating these two concepts holds great potential for the study of material culture. Moreover, when situated within an explicit study of population movement, such an approach may well shed new light on culture contact. In the present study, combs are seen as highly visible media, involved in the communication of identity in a changing social and political climate. Thus, spatial and chronological patterning in comb types and attributes are understood as expressions of the dynamics of culture contact mediated through stylistic communication (see Chapter 9).

Such a study will sit well alongside other recent studies of the Viking Age (e.g. Graham-Campbell *et al.* 2001; Hadley and Richards 2000; Barrett 2003b; Svanberg 2003; Hines *et al.* 2004).

### 3.3 Trade and Exchange

Even when explicitly theorized, the relationship between material culture and identity retains complexity. There are a number of ways in which combs may have travelled *without* being epiphenomena of migration or emblematic/assertive style. In the case of reciprocal exchange, the style of a particular object is likely to say as much about the identity of the gift-giver as that of the receiver, while in a market system a consumer's degree of control over the formal and ornamental character of a 'ready-made' purchase also requires consideration. Nevertheless, exchange and identity may be inter-related. 'Consumer' choice must have played a more or less direct role in determining comb form and decoration; social rules (*habitus*) surely dictated what was seen as an appropriate gift or grave good in any given circumstance. Similarly, even in market exchange, consumers may have made decisions about which market to patronise; decisions once again grounded in the *habitus*, and influenced by the (conscious or unconscious) desire to communicate one's identity.

Nonetheless, meaning is fundamentally dependent upon context, and it is therefore vital to have a framework to understand these diverse comb 'lifeways'. Recent 'interpretative' approaches to trade may have some utility in this regard. Some post-processual archaeologists have been inclined to reconstruct life histories or 'cultural biographies' of objects (see papers in Appadurai 1986; Kopytoff 1986; Hoskins 1998; Gosden and Marshall 1999; Saunders 1999; Gilchrist 2000; Jones 2002). Production, exchange, ownership, and use may all affect the way in which an artefact is invested with meaning. Such meaning may be built upon, transformed and manipulated throughout the object's life history, as it changes hands, is physically altered, and comes to be used or displayed in new contexts; one might suggest that it becomes invested with a sort of 'cultural capital' (Bourdieu 1977, 1998). Thus, "...the histories of many objects are composed of shifts of

context and perspective” (see Gosden and Marshall 1999: 174). In this way, artefacts are not fundamentally ‘commodities’ or ‘prestige items’; perceptions of objects are subject to temporal and contextual variability (Kopytoff 1986).

This approach may be brought to bear on whole classes of artefact. Thus, it may be possible to piece together generic life histories for Viking Age antler combs (see Appadurai 1986: 34). Information relating to their mode of production, trade, display, use, maintenance, and deposition could allow us to learn something of the dynamic meanings attached to such objects. Moreover, we may construct such biographies around different foci, thus allowing us to write economic, technological, social, or ideological histories (see Kopytoff 1986: 68). Given the broad chronological span of this research, it may be possible to apply a biographical approach in order to investigate the changing role of the comb in the structuring of identity.

### 3.4 The Theoretical Approach of this Thesis

Material culture is clearly of great importance in human communication, and a great deal can be learnt about identity and signaling through the analysis of artefacts. However, the artefacts themselves tell us nothing without the proper interpretative framework. Below, I outline the theoretical approach of this thesis, and detail how the approaches discussed above have informed it.

In practice, it will be possible to access identity only on the broadest of scales. However, the timescale of the analysis facilitates diachronic study. Thus, combs will be used to understand the nature and dynamics of culture contact in two contrasting contexts, over an extended, and politically unsettled period. It will be interesting to consider cultural, political, and ethnic interaction, as well as the manner in which combs are employed in the negotiation of such relationships. The approach taken herein is explicitly, though not solely typological. Stylistic study was focused on the recognition of patterning within the occurrences, associations, and dissociations of discrete attributes. Though this led to the production of a classification (Chapter 6), the primary goal was not the construction of a typology. Rather, this was a necessary starting point, as it facilitated the characterisation of

patterning as either spatial or chronological, and allowed patterning in further traits to be independently analysed (see Chapter 4). This *typological* grounding facilitates the analysis of formal and ornamental variability in *stylistic terms*; that is to say that it will be interpreted with regard to its use in the transmission of information (see Glossary).

Indeed, style is herein seen as communicative and constructive, rather than passive and inert. In detail, a lead is taken from Polly Weissner's (1983) work, in which style may be seen as *emblemic* or *assertive*. Thus one may expect particular facets of comb design to relate to different types of identity; some may denote group membership (whether that be kin-based, or ethnically derived), while others may relate to personal identity (encompassing age, gender, sexuality, occupation, social and economic status). Whether identity is visible on all of these levels is entirely dependent upon data resolution (see Chapter 4).

This analysis of style feeds into an understanding of the nature of identity. Influenced by the work of Barth (1969) and Jones (1997), identity is envisioned as subject to construction, manipulation, destruction and reconstruction at the hands of human society. However, that is not to say that it may be reduced to the level of purely rational thought, by which it may be freely produced or modified in order to fulfill a rôle at any given time. Rather, certain aspects of identity may be subject to manipulation and reinvention in certain contexts, while others are less flexible. Again, the degree to which such mutability is visible will vary depending upon the frame of reference, but this relates to the availability of contextual information, and as such must be seen as a taphonomic distinction, rather than a sociological one. Indeed, it is only through the recognition of similar symbolic devices (such as ornamental motifs) in contexts separated in space, time, or social environment, that one may appreciate the diversity and dynamics of stylistic communication.

In short, the analysis of comb style undertaken in this thesis is applied with the aim of understanding how this class of artefact was used in the communication and adaptation of identity, rather than seeing types or stylistic attributes as fundamentally characteristic of a particular culture, language group, or ethnicity. It may well be the case that the most overt reason a combmaker decides to decorate a comb is (after Hodder 1991b: 114) "because it makes it beautiful" (and therefore more desirable as a gift or saleable commodity), but on

other levels, such variation in ornament or form might indicate group membership or opposition. Thus, objects are used to create, manipulate, communicate, structure, and perpetuate ideas of group membership or difference, whether they be socioeconomic, age, gender, class, ethnic, or kin-based. People act through their *habitus*, but they may follow, bend, or break the 'rules of the game'. Items of material culture - including combs - are employed in this action, and they thus bear the signs that were used in such communication and action.

However, these signs do not simply communicate group membership. Instead, a trait imbued with a given meaning may be appropriated and incorporated into a scheme of entirely different significance, in which the attribute's original connotation may persist, be manipulated, or transformed (see Hodder 1991a: 93). Thus, if one can no longer assume that the meanings of particular traits or artefacts are fixed, then the study of context is fundamental. Consistently occurring traits or associations in particular archaeological contexts may allow one to construct possible meanings. To accomplish this, an understanding of the *nature* of such contexts is essential. For instance, it is appropriate to consider the arranged paraphernalia of a burial context as something of a ritual representation or idealisation of - rather than a direct reflection of - 'genuine' social, economic and cultural relations in life (see Samson 1987; Pader 1982: 198-199; Carver 2000; Williams 2004). The manner in which such a context is interpreted clearly has implications for the inferences relating to combs found within such a context. The same is true at a larger frame of reference; the analyst's conceptions of social, economic, or political context inevitably colour interpretation of the combs that are representative of that milieu.

Nonetheless, some progress is possible, and an example is perhaps appropriate. In Sharples' (2003) perspicacious overview of the material culture of some important Scottish Iron Age sites, he noted a change in the use of material culture between the Middle and Late Iron Age (previously remarked upon by, for example, Armit [1996: 184-185]). In the earlier period, status and identity seem to have been communicated through monumental

architecture; the broch<sup>1</sup> being the ultimate symbol of power. Furthermore, this architecture supports the idea of the power of community. In the later Iron Age, building structures were generally less complex. Broadly contemporary with this shift was an increase in the quantity and diversity of items of portable material culture such as pins, brooches, and combs, while imported objects also became much more common. Sharples interprets this as representing a shift in the perception of identity; the individual became more important as the community receded. Membership or affiliation with outside groups was perhaps increasingly symbolised through the use of particular objects, probably received via the medium of gift exchange.

Thus, by the Late Iron Age of Atlantic Scotland, the template was already in place for the signalling of identity through portable material culture. Sharples argues that the ways in which one's identity might be interpreted were not fixed; rather they were active and flexible. Thus, the choice of a particular tool, item of jewellery, or adornment in a particular situation might refer to that person's age, status, ethnicity, political group, gender, sexuality or marital status (*cf* Leach 1976; Weissner 1983; Burke 1989). It is easy to envision how combs may have been used in such a manner.

In all of this, it is fundamental that one has an understanding of the role of exchange in determining comb form and ornament. As we have seen, rather than confounding explanation, such processes are closely interdigitated with the expression of identity, and, providing that this is taken into account, do not stand in the way of our understanding of migration, culture contact, or communication. Nonetheless, it is important that any approach to the study of these phenomena is explicitly formulated, and a most useful construct in the present case is that of the *object biography*.

While a long time-depth application of this concept fosters an appreciation of the changing social and economic roles of combs, the biographical approach has greatest potential for the understanding of the importance of single objects. This approach is fundamentally dependent upon well-recorded data, and is thus inappropriate in many cases, but it should

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<sup>1</sup> These circular, drystone towers are characteristic of Middle Iron Age Atlantic Scotland, and have been variously interpreted as fortified farmsteads, refuges, or high status households (Stevenson 1955; Hedges

not be limited to perceived 'prestige' items. Indeed, wherever sufficient information relevant to a comb's production, consumption, and disposal are available, it is possible to write a 'life history'. Of course, the size of the present corpus makes such an agenda unviable; instead, individually selected combs are taken as case studies for which biographies may be reconstructed. Through the application of this procedure to a range of combs, one may acquire some understanding of the level of diversity that characterised their use.

## Chapter 4: Methodology

Developing upon the previous chapter's general theoretical framework, in this chapter the specific analytical methods of the thesis are outlined. Following consideration of sample selection and recording procedures, each of five major areas of research is discussed. First, methods of raw material analysis are outlined. This section is followed by a discussion of the manner in which variation in comb form and decoration (typology) will be analysed, outlining the attributes that will be recorded, and how their inter-relationships will be studied. Sections on method and quality of manufacture, use wear and repair follow. The chapter closes with a brief discussion of the approach taken in the synthesis of results, demonstrating how inferences may be drawn by combining the theoretical perspectives of Chapter 3 with the practical methods addressed below.

Above all, it should be noted that the intention is to combine these many areas of study, so as to devise a meaningful analysis. A useful example of the way in which the study of form and decoration may be integrated with raw material analysis in Viking Age archaeology is provided by Caroline Paterson's (2001) work on Insular belt-fittings from pagan Norse graves in Scotland. Paterson found that typologically different artefacts also often had different working traditions; most bronze objects were of a form manufactured in Ireland or the Irish Sea region, whereas artefacts consistent with Scandinavian manufacture were more commonly of brass. Interestingly, however, certain Insular objects were made of gunmetal, suggesting the random recycling of different copper alloys, some of which are likely to have originated in Scandinavian imports. The close association of one object with Norwegian textile (identified on the basis of its twill pattern) adds further support to the idea that these objects were produced in an area inhabited by both Scandinavians and natives of the British Isles. Thus, it seems that Scandinavian migrants - or at least individuals buried according to Scandinavian ritual with imported grave goods - had a liking for Insular belt-fittings. This inclination ultimately manifested itself in the production of such objects from recycled Scandinavian materials. It is hoped that informative developments such as this may be recognised through the present study of combs.

## 4.1 Sample Selection

As already noted, the aim of the study is to use combs to help understand the construction and communication of identity in Viking Age and medieval England and Scotland. Thus, the study comprises the following components:

- A survey of published combs from European sites broadly dated to the period between AD 700 and 1400, with the intention of providing a context within which more focused studies can be undertaken (Chapter 5). A desk-based assessment was supplemented by primary study of samples from Birka, Sweden (dated to the eighth to tenth centuries) and Trondheim, Norway (where collections come from deposits dating between the late tenth and sixteenth centuries);
- A detailed physical study of combs broadly dated to the period AD 700-1400 from northern England (Chapter 7) and Atlantic Scotland (Chapter 8), designed so as to facilitate comparisons between these two geographically and politically discrete regions (fig. 4.1; see *Appendices II and IV*).
- Comparison of the European and British material to facilitate the recognition of patterning, and thus allow one to infer the effects of trade, acculturation, and the fusion of social ideologies that may have accompanied Scandinavian settlement in the British Isles (Chapter 9).

It is worth considering the approach to data collection in a little more detail. A sample of the large, well-studied corpus from Birka was recorded in detail, so as to provide a good example of Viking Age Scandinavian material. A smaller sample of material from excavations in and around Trondheim was then also studied, to provide an example of medieval Scandinavian material, and (insofar as there are some Viking Age combs from graves in Trøndelag predating the foundation of Nidaros) of intra-Scandinavian variation. These primary comparative studies were then complemented by a wide-ranging survey of published collections from a number of sites from Scandinavia, central Europe, eastern Russia, Britain and Ireland (Chapter 6). This background research allowed the development of a new, more holistic typology, and documented broad patterning in comb form, decoration, and manufacture through time and space.

The British Isles research was more intensive (see Appendix IV), but nonetheless makes no claim to be comprehensive. In England, combs from several pre-Viking to medieval sites in northern England were recorded. In practice, most material came from Yorkshire and Lincolnshire, particularly the towns of York and Lincoln themselves, though a small quantity of material was recovered from medieval Durham. In addition, basic data was acquired from key sites for which detailed recording proved impossible (West Heslerton and Flixborough). For Scotland, data was collected from a large sample of sites on the coast and islands of northern and western Scotland, as well as from a number of spotfinds from these regions. The sample should be seen as relating to Atlantic Scotland; the eastern seaboard and central and southern mainland are largely unrepresented. Rather than being an artefact of sample selection, this seems to be a genuine (probably taphonomic) absence in the record.

Thus, a considerable body of data was collected (2293 records; see *Appendix IV*), of which 577 were classified as *large fragments* or *complete combs* (see below for definitions). In some cases, detailed and systematically recorded data and images were available (e.g. West Heslerton and Flixborough), allowing combs that could not be directly observed to be included in the database, though raw material identifications and 'use wear' assessments (see below) were not performed.

It must be understood that the known material presumably represents a fraction of that which was originally used and deposited in the past, though there is no reason to suspect that the nature of the excavated material differs substantially from that originally deposited. While certain selective factors may have played a role, such as the number of high status sites in Orkney (see Graham-Campbell and Batey 1998: 62), and the small number of identified rural sites from Viking Age England, it is difficult to see how this situation could be remedied. Similarly, it may be suggested that the sites reflect foci of academic interest, rather than a true distribution. Some might also claim that there is a bias in England toward 'productive' sites such as Cottam, recognised through the action of metal detectorists. However, this distinction has no firm foundation, and seems unlikely to have any meaning in terms of the nature of such sites other than in their means of discovery (see Richards

1999b). All in all, given the size of the sample it was deemed appropriate to proceed with caution, taking care not to extrapolate too freely from the finds that one had.

## 4.2 Means of Recording

All combs and fragments were visually recorded using digital photography (or line drawing where more appropriate). A selection of these images are stored in a digital archive in CD-ROM format, in addition to those represented as plates in the thesis itself. Details for each comb were noted on specially-designed *pro-forma* record sheets (fig. 4.2), which included entries for context information, preservation, raw materials, morphology, ornament, manufacturing techniques, and use wear. Each comb was assigned a 'unique identifier' number, allowing cross reference between written records, photographs and drawings. With a view to quantification at the analysis stage, each fragment was also classified according to the following categories:

- Complete Comb (80-100% present)
- Large Fragment (50-80% present)
- Small Fragment 20-50% present)
- Tiny Fragment (1-20% present)

Records were transferred to a Microsoft Access relational database (fig. 4.3), designed so as to facilitate easy comparison upon completion of data collection. An important consideration was ease of use and clarity of terminology, so that comparisons could easily be made with studies of comb material from elsewhere in the UK, Europe and the rest of the Viking and medieval world. Analysis proceeded on a qualitative level, through the production of distribution maps using *ArcView* G.I.S., and through integration with the *Minitab* and *SPSS* statistical packages for a more sophisticated, quantitative treatment (see below). All of these methods were carefully considered prior to database design.

### 4.3 Raw Material Analysis

Before study of the corpus could begin in earnest, a number of preliminary investigations had to be undertaken. A fundamental part of this project is the identification of raw materials, and before this could begin, some discussion and assessment of analytical techniques was necessary. In particular, prior to this research, the differentiation of deer species was relatively untested, and a number of identification criteria required definition, development, and investigation (Chapter 5). The results of these experiments informed the archaeological investigations detailed in Chapters 7 and 8, wherein the identification of each comb and comb fragment from the survey corpus was undertaken first at the primary level (where it could be characterised as bone, antler, ivory, horn, or whalebone), and, where possible, at a higher, secondary level (species). The categories of possible identifications are outlined in **table 4.1**. In practice, most postcranial bone was identified simply as 'indeterminate bone'.

It should be noted that a considerable number of combs could only be identified as 'indeterminate bone/antler', while a 'probable' qualification was often necessary where more precise characterisation *was* possible. This level of caution is appropriate for the study of highly-worked skeletal materials (see S. O'Connor 1987). Wooden or tortoiseshell combs were not considered as part of the analysis, so their absence from the corpus should not be taken to be culturally significant.

### 4.4 Typology

The approach to the study of form and decoration in composite combs has often been explicitly typological (see Chapters 2 and 3), and when studying a large corpus of material, it is neither possible nor desirable to entirely avoid classification of some sort. While the method of analysis taken herein is often quantitative, the primary purpose of this study was not to produce a typology, nor to situate combs from the British Isles within previously constructed schemes from elsewhere. Nonetheless, where identifiable, the relationships of particular combs to well-known typologies (*e.g.* Ambrosiani 1981; Dunlevy 1988) were recorded in order to facilitate future comparative work. However, in order to assist

analysis, a new typology was devised (Chapter 5). To the author's knowledge, this is the first typology developed explicitly for the study of combs from Viking Age and medieval England and Scotland. It is based on previous work, particularly that of MacGregor (1985), Dunlevy (1988), and Curle (1982). It is therefore likely that the types have chronological, chorological, and stylistic (as defined in Chapter 3) dimensions, but these are not assumed *a priori*. Thus established, the new typology formed the basis for further, more detailed, analyses based on individual traits and variations in form and decoration. These attributes are detailed in **table 4.2** and **figures 4.4 -4.12**

Analysis of the occurrence of these traits facilitated the recognition of common decorative schemes or layouts, and correlations between the presence or absence of certain designs were highlighted, allowing unusual deviations from the common patterns to be more easily identified.

Some explanation as to why these criteria were chosen is appropriate. It is often helpful to view artefact style as consisting of form, decoration, and arrangement (see for example Richards 1987; Smirnova 2005), and this approach is taken herein. The first aspect to be recorded for each comb was form. This was based on a range of variables relating to general size, proportions, profile and cross-sectional geometry. Variables were chosen based on a number of criteria:

- Some of the variables recorded were based on personal decisions as to which aspects of comb form would prove meaningful (*e.g.* maximum and minimum lengths and widths);
- Some were chosen as they had already been used by other researchers, and would thus allow comparison of results. Nonetheless, these variables were recorded only where they were felt to be of utility. The measurement ratios, such as *tdr* (which characterises the disparity in tooth density between the two edges of a double-sided comb; see below) are a good example of this (see for instance Smirnova 2002a).

More explicitly, form was defined in terms of size and shape. Size was determined through gross measurements, while shape was described using measurements such as overall height,

width and thickness, together with measurement ratios, profiles of endplates and cross-sectional and longitudinal profiles of connecting plates.

Decorative motifs were also recorded (**fig. 4.9**). These included vertical, horizontal, and marginal lines, ring-and-dot motifs, geometric designs (including obliques, chevrons, zig-zags, meanders, and chequerboard patterns) cross-hatching, saltires, diamonds, interlace and zoomorphism. Manner of decoration (*i.e.* incised, punched or openwork) was also noted. However, recording was not restricted to a presence/absence analysis, and a combination of decorative arrangements (**fig. 4.10**) and schemes (**table 4.3, figs 4.11 and 4.12**) allow the analysis of motif positioning (*e.g.* centre field of connecting plate, ends of connecting plate or end-plates), inter-relationships, and degree of symmetry. Thus all three of the above mentioned facets of style (form, decoration and arrangement) were accounted for.

Once recorded, the occurrences, relationships and associations of these variables were investigated quantitatively. Tables helped to demonstrate morphological variability within and between types, and, using dated contexts where available, the chronological or spatial nature of variability was assessed.

In addition to these basic quantitative analyses, more sophisticated statistical techniques were employed, directed at specific questions. In particular, correspondence analyses were carried out, with the aim of discerning hidden patterning in terms of similarity and difference between combs, based on a number of disparate criteria. The utility of correspondence analysis in seriation is now well-established, particularly in Scandinavian archaeology (*e.g.* Kjeld Jensen and Høilund Nielsen 1997; Hines 1999). Though it has been utilised most frequently in the study of grave groups, it is equally applicable to the analysis of individual classes of artefact, as it facilitates the recognition of patterning in the occurrence and associations of discrete formal and ornamental attributes (*e.g.* Axboe 1999). Moreover, analysis should not be limited to the search for classic seriations with chronological significance. Rather, it is appreciated that any identified associations may be meaningful in some way. In the present analysis, the recognition of seriation curves and discrete clusters are suggestive of chronological development and separate traditions respectively.

However, investigation does not conclude with the production of CA plots. A thorough qualitative understanding of the artefacts themselves is fundamental to their interpretation, and the correspondence analyses are used in conjunction with other techniques (see above). In the first instance, correspondence analysis is used to support or qualify the existence of the types defined (necessarily subjectively) in Chapter 5. In Chapters 7 and 8, they are applied with the aim of identifying further patterning *within* and *between* types. Such variation may then be interpreted in spatial or social terms.

## 4.5 Method and Quality of Manufacture

The distinction between form, decoration and method of manufacture is a theoretical division, and depends on the levels of human choice to which we attribute various facets of comb appearance. Any such separation may be seen as somewhat arbitrary, but is necessary in practice. Thus, a number of variables are collectively taken as indicative of method and quality of manufacture. It is possible that each variable is influenced by different factors, but combinations of them, and the mode of construction as a whole, may be informative.

### 4.5.1 Method of manufacture

Dimensions of individual components are likely to prove enlightening. For example, variations in billet and connecting plate height, width and thickness might relate to individual choice, tradition, or the working parameters of different raw materials. Thus, these variables are measured, and by plotting them against various other measurements, their significance may be elucidated. Given the large quantity of combs analysed, and the number of variables recorded for each, it is not efficient to record in detail the dimensions of each billet in a comb. Thus, for complete combs, the median billet measurement was taken (in combs with even numbers of billets, the two closest to the median were recorded and averaged), and where width or thickness varies within a single billet due to tapering, the maximum measurement was recorded.

Similarly, a study of tooth spacing may prove profitable. It was decided that a sensible measure would be number of teeth per 10mm. Similar measures have been used before (e.g. Petitjean 1995: 153), and their adoption herein fosters some level of consistency and comparability. Furthermore, spacing seems likely to be more informative than direct tooth dimensions for two reasons. Firstly, it is often impossible to know the extent to which tooth length, width and thickness have been modified through use wear. Secondly, the miniscule variations in tooth widths and thicknesses that might be expected between combs would be meaningless when one considers the level of precision achievable given the nature of measurement using the human eye and calipers. Conversely, tooth *shape* is considered (i.e. whether teeth were rectangular, round, or lenticular in cross-section, and whether they have a straight or tapering profile; fig. 4.13).

On double-sided combs, the level of *differentiation* in tooth-spacing between sides seemed likely to be a useful measurement. For example, double-sided combs from pre-Viking and Viking Age England and Scotland are rarely differentiated, whereas Roman and high medieval double-sided types frequently feature one set of coarse, and one set of fine teeth (see MacGregor 1975: 80; 1985: 78, 92; Smith 2003: 114; fig. 4.14). However, this categorisation is a little crude. It is likely that there is a continuum of levels of tooth differentiation, perhaps with meaningful clusters at certain points. For this reason, it is useful to calculate a differentiation index. Once again, a useful precedent has been set by Lyuba Smirnova, with her '*tdr*' (Smirnova 2002: 276). Herein, this is defined as:

$$tdr = td^b / td^t$$

where: *tdr* = tooth density ratio

$td^b$  = tooth density (base) / teeth per cm

$td^t$  = tooth density (top) / teeth per cm

Thus, where there was no tooth differentiation at all, with teeth of equal density on both sides of the comb, then the *tdr* = 1. Where basal teeth were less densely spaced than the top teeth, then the *tdr* will be less than 1. By convention, one views the comb with fine teeth at the bottom (see glossary). Thus, tooth differentiation is described by a ratio that is close to 1.0, or considerably less than this. Of course, there is a gradational change, but in

practice at Novgorod, Smirnova (2002: 276-7) found that it was possible to draw a meaningful division between even-toothed combs and those with differentiated teeth at around 0.40. Smirnova found this measure to be of great utility, allowing her to postulate different working traditions, locally made objects and imports.

Tooth gradation (**fig. 4.15**, sometimes referred to as tooth graduation, see Glossary) is also potentially informative, as it is interesting to see whether the endteeth of combs of a given type were always treated in a similar manner, or if there was an element of manufacturer/consumer choice involved. Such minor variation might conceivably relate to regional tradition. Thus, the presence/absence of gradation is recorded (for both edges in double-sided combs).

The final potentially useful variable associated with tooth cutting relates to the toothcuts themselves. As the various component parts of a comb were invariably assembled prior to the cutting of teeth (Ambrosiani 1981: 113; Galloway and Newcomer 1981; MacGregor 1985: 74), the edges of connecting plates frequently bear saw marks. This has been noted before, but to the author's knowledge no systematic survey has been undertaken prior to this project. Such an investigation seemed a worthwhile exercise, as relationship between quality of manufacture (see below) and presence/absence of tooth-cuts may help to demonstrate whether such markings were seen as attractive, tolerable, or unacceptable. Though the presence or absence of tooth cutting on combs of particular types might not appear significant in itself, it is possible that variations in time and space might relate to different manufacturing traditions or consumer requirements.

In some combs seemingly accidental marks can be found randomly along connecting plate edges, and some such combs demonstrate an asymmetry in the arrangement of such cuts, suggesting that the comb was turned around midway through tooth-cutting (see MacGregor 1985: 74). Conversely, more deliberate practices of cuts for every tooth, or every *other* tooth, also exist. Furthermore, some combs bear what seem to be preconceived *decorative* cutmarks, of consistent depth, length and orientation (*e.g.* Dunlevy 1988: 358; **fig. 4.16**).

Another potentially informative area of study is the analysis of riveting practice. A number of variables may be recorded in this respect, perhaps the most obvious being the materials used. Iron rivets may be identified by their distinctive rusting and the 'halo' marking that this may leave on bone or antler components, while copper alloy rivets leave a green corrosion product (see Watkinson and Neal 1998; fig. 5.28) (**fig. 4.17a-b**). Bone or antler pegs are also known (see Dunlevy 1988: 343), and should be easily recognisable as 'skeletal' materials (**fig. 4.17c**). Of course, billet fragments bearing no rivets or marking cannot be confidently assessed in this manner.

It is also informative to study the arrangement of rivets. For example, where it is possible to study complete combs, it may be informative to consider the ratio of the number of rivets to number of billets. In a given comb, rivets may pass through billet centres, or through the edges between them. We may ask if rivets secure each individual plate, or merely alternate ones, and whether the centre- or endplates were secured differently to other billets. Furthermore, we may measure the spacing between each rivet in a comb, in order to test its evenness (see for example Foreman in press). Such measurements also facilitate the calculation and comparison of average rivet spacing, and have allowed some scholars to postulate distinctive cultural traditions (*e.g.* Smirnova 2002: 37). While the aim herein is not to explicitly search for known styles, the emergence of any such patterning is nonetheless of interest. It should be noted that endplates were excluded from such analysis, as they were frequently fixed through their centres, irrespective of the technique used for other billets. In practice, it soon became clear that riveting patterns were best characterised more qualitatively, according to the following classification:

- Rivets at **every** edge
- Rivets at **alternating** edges
- Rivets in billet **centres**
- Rivets showing **random mixtures** of the above
- Rivets arranged for **decorative** effect, rather than function.

The first three techniques are illustrated schematically in **figure 4.18**. The latter case (invariably involving copper alloy rivets), is a little more complex, as it can be expressed in a number of ways (**fig. 4.19**):

- **Single line** of close-set rivets
- **Multiple lines** of close-set rivets
- **Vertical pairs** of rivets
- **Offset pairs** of rivets
- Decorative **motifs**, such as crosses

The criteria for the assessment of manufacturing technique are summarised in **table 4.4**.

#### **4.5.2 Quality of manufacture**

Quality of manufacture is another potentially informative facet of this study. In particular, variation in quality of construction and ornament, together with method of manufacture (see above) between small sites and larger settlements, could have implications for the organisation of the comb-making industry and its means of distribution. However, the selection of criteria suitable for the assessment of quality of comb manufacture is not straightforward.

Many of the criteria used in this study are developments of those measurements employed in the analysis of method of manufacture (see above). For example, it is useful to compare how effectively rivets have been incorporated into the design of the comb. Although any definition of what is aesthetically pleasing is likely to be highly subjective, it is nonetheless possible to recognise when riveting was used as an active player in decoration. For example, some late medieval double-sided composite combs feature double rows of very even and closely spaced rivets; something which cannot be seen in purely functional terms (see above; Smirnova 2002: 248). Similarly, rivets might be carefully and symmetrically placed, possibly implying some pre-planning and designing. In contrast, some combs show a lack of forethought, in which rivets intrude upon connecting plate decoration (see for example Riddler 1991).

However, seeing particular variables as a barometer of the level of proficiency of production necessitates assumptions as to which aspects of comb aesthetics would be

considered more or less desirable. For example, was evenness and symmetry of design more important than strength and robustity of construction, and were these two facets of quality always compatible? It may even be that a particular rivet-to-billet style and pleasing outward appearance were mutually exclusive.

An arguably simpler criterion to interpret is quality of decoration. However, even this proves more complex than one might suspect, as it is unclear whether one should consider deviations from common styles to be inferior imitations, or innovative variations. Similarly, one has no way of knowing whether decoration using rivets, incised, openwork or plastic ornamentation was considered preferable. It seems unlikely that there are simple answers to these questions, and that predilections depend not just on chronology, but on cultural milieu and context of use and manufacture.

Nonetheless, some attempt to score quality has to be made. Thus, this project approaches the problem by taking scores for various criteria (table 4.5 and figs 4.20-4.21). In addition to these criteria, a more qualitative judgement of each comb is made, based on a consideration of overall appearance. Clearly, any such evaluations are impossible to explicitly justify, but in practice are likely to be invaluable in analysis, as they may be used to qualify arguments based on the other, ostensibly more objective criteria. In general, these measurements of quality showed broad agreement within any given comb, allowing the investigation of overall quality scores using tables. However, for cases in which these measures differed for one another (for instance where quality of form differed from standard of decoration), separate investigations are undertaken, as such disparities seem likely to prove meaningful.

## 4.6 Wear and Repair

Level of wear is recorded on a scale of 0-5 (see table 4.6 and fig. 4.22). This is primarily based on an assessment of the level of tooth wear and beading. Missing teeth are marked as absent, but tooth loss is not taken as a criterion for wear assessment in its own right, as this could be related to depositional context as much as use wear. However, it is deemed noteworthy when associated with heavily beaded teeth. Further support comes from the recognition of damage and markings that may have occurred during the comb's use-life,

such as the polishing produced by repeated handling, or small chips and scratches that showed no sign of being freshly produced. Of course, the situation is clouded somewhat by damage caused by redeposition, bioturbation, sediment mixing and other taphonomic processes, and for this reason wear scores are never based on assessments of surface damage in isolation.

Repair is necessarily recorded on a more *ad hoc* basis, using criteria outlined in **table 4.7**. Where repairs have clearly been made, they are described in detail, drawn and photographed, and are considered as part of the scheme used to derive the comb's level of wear. Of course, some of these criteria are rather subjective, and recognition of repair is most reliable when several are apparent on the same comb. Similarly, it is possible that some, well-executed repairs have passed unnoticed. Thus, the study of repair is carried out in a fundamentally qualitative manner, and influences the writing of biographies for individual combs more than the analysis of the corpus as a whole.

However, where evidence is clear-cut, the incorporation of repair data into wear scores (as per **table 4.6**) allows a more thorough understanding of use wear. Wear scores are analysed using tables and maps. This allows the recognition of relationships between level of wear, geography, chronological period and specific context, ultimately aiding in the development of an understanding of how combs were used and consumed, and their place within the symbolic repertoire of Viking Age and medieval England and Scotland. In particular, wear data facilitates the recognition of chronological, geographical and status-related variations in comb use.

## 4.7 Analysis of Working Waste

In addition to the study of combs and comb fragments, a number of deposits of combmaking waste are analysed. These are studied largely in accordance with the methodology for the comb corpus; where possible raw material is identified, the form of individual components are recorded, and details of method and quality of manufacture are

noted. Furthermore, in order to determine the precise nature of these deposits, evidence of comb repair is explicitly pursued.

The number of deposits studied is not large, as this is not the primary focus of the research. From England, there is plentiful evidence of bone and antler-working at Fishergate and Coppergate, York (Rogers 1993; MacGregor *et al.* 1999). Few comb-manufacturing sites are known from northern and north-western Scotland, though Bornais (Bornish) on South Uist (Sharples 1997, 1999, 2000), and Traigh Bostadh, Uig (Neighbour and Burgess 1996) are of note. It is extremely helpful that this material is available, as otherwise one would lack any knowledge of local production in the far north. Nonetheless, one should again be wary of extending the findings of the analysis of these sites across the whole area. Given the cursory nature of investigation into these assemblages, the results - other than raw material use - are not treated quantitatively or systematically, but are referred to in Chapters 7, 8 and 9, as they have bearing on the organisation of the combmaking craft.

#### 4.8 An Integrated Approach

It is unlikely that all of these variables will prove informative in their own right, and while all are included in correspondence analyses in the first instance, detailed results of quantitative analyses are presented only for those variables that proved informative. Nonetheless, the methods outlined above (and summarised in **table 4.8**) are applied within an explicit framework, informed by the aims of the study (Chapter 1) and its theoretical grounding (Chapter 3). Spatial, chronological, and contextual patterning are sought, both in types and in attributes relating to form, ornament, method and quality of manufacture, and use wear (Chapters 7 and 8). Such analyses foster understanding of the production, distribution, use and stylistic role of pre-Viking to medieval combs in northern Britain (Chapter 9).

## Chapter 5: Raw Material Analysis

### 5.1 Introduction

The recognition of raw materials in combs is dependent upon prior demonstration of the validity of the identification techniques. In this chapter, previous work on the distinction of bone, antler, ivory and horn will be considered, and this will be followed by a review of the published methods used to identify antler to species level. Building upon these bases, new investigations using modern antler are outlined, followed by initial blind trials and replications using volunteers. This series of analyses allows the consistency of inter-species macrostructural variation to be demonstrated, its preservation in small fragments of worked material verified, and the ease with which it may be recognised by more or less experienced analysts assessed. The results of these investigations are then considered, together with their implications for the analysis of archaeological combs.

#### 5.1.1 Bone, antler, ivory, and horn

Although some ancient combs were made of wood (Petitjean 1995: 145; see especially Smirnova 2002), Viking Age and medieval examples are comparatively rare; whether this is chiefly due to producer/consumer choice, availability of appropriate materials, or preservation is a matter of contention. However, combs crafted from animal products (or 'skeletal' materials in the broadest sense) are commonly found in these periods. Thus, this thesis focuses on the analysis of combs crafted from bone and antler. Skeletal and dental materials that are rarely found in Viking Age and medieval Europe (*e.g.* hippopotamus, warthog, and whale teeth) are not dealt with herein, and the reader is referred to Penniman (1952) and Espinoza and Mann (1992) for details.

The first step in the analysis of 'skeletal' objects is to identify the basic material. Details are discussed below, but the fundamental criteria are outlined in a key (fig. 5.1). The fundamentals of this methodology are derived largely from Sonia O'Connor's (1987a) work on the artefacts excavated at York, as this is the clearest account of the application of raw material identification techniques to archaeological material. However, criteria from other guides have been incorporated, both those from within archaeology (*e.g.* MacGregor 1985; Krzyskowska 1990; Deschler-Erb 1998), and without (Penniman

1952; Halstead 1974; Espinoza and Mann 1992). This discussion focuses on those situations in which the various materials can be readily distinguished using the naked eye or low-power microscopy; the reader is referred to the above texts for fuller discussion.

### *Horn*

Horn, a keratinaceous product, is usually identifiable by the fact that it is translucent, and that it is frequently 'corrugated', giving rise to characteristic veining and streaking in pigment (S. O'Connor 1987: 15). Its identification is not dealt with in depth here, as combs (and artefacts in general) crafted from this material are rarely found in English and Scottish contexts prior to the later Middle Ages (see MacGregor 1989: 12; 1991: 364; 1998: 12-13). This may be partially related to its preservation potential, and partially to the reality of early medieval working practices (see Chapter 2).

### *Cetacean bone*

The structure of whale bone is much like that of terrestrial mammal bone, but all structures exist on a much larger scale (see Penniman 1952: 32). The 'jawpan' of the whale is the most frequently utilised bone product, as this provides relatively extensive areas of compact tissue, while the rest of the skeleton is highly vascular. Surfaces of whale bone show a characteristic 'streaked and dotted appearance' that is extremely distinctive, even in objects of very small size (S. O'Connor 1987: 13). Internal surfaces, where preserved, may exhibit a diagnostic 'honeycomb' texture (fig. 5.2).

### *Ivory*

On first sight, ivory tends to appear very similar to bone (see below), but, other than a distinctive lamination, it seems largely amorphous, lacking any real structure. Elephant ivory is circular or sub-circular in cross-section, and is marked by the diagnostic criss-cross pattern of laminations and transverse tubules known as 'engine-turning' or Schreger lines (see fig. 5.3; Penniman 1952). The angles of intersection of these features may be used to differentiate between mammoth and elephant ivory (see Espinoza and Mann 1992).

Walrus ivory lacks these diagnostic features (S. O'Connor 1987; Smirnova 2005: 15), but it is oval in cross section, and its secondary dentine has a highly distinctive 'nodular' structure (see S. O'Connor 1987: 13-14; T.P. O'Connor 1987: 7). (Fig. 5.4)

## *Bone and Antler*

Unfortunately, it is often more difficult to identify a material as antler or bone, as they are fundamentally the same material (S. O'Connor 1987: 9; T.P. O'Connor 1987: 7). Nonetheless, there are some useful criteria, and when used in combination they often help us to reach at least a 'probable' identification. As bone and antler are probably the most commonly occurring materials in Viking Age and medieval combs and related objects, their differentiation is discussed in some detail below.

Logical reasoning may present a useful starting point. For example, frequent breaks and repairs to an object may suggest that it is constructed from bone rather than antler, given the greater amount of work required to break antler (see MacGregor and Currey 1983). We should obviously take care when using colour as a criterion, given the effect of burial environment on this variable (fig. 5.5), but antler may appear more 'woody' than bone (S. O'Connor 1987: 10). More precisely, Lyuba Smirnova (*pers comm.*) suggests that compact antler is more porous than bone at the microscopic level, thus drawing in more fluid from groundwater, and is therefore preserved with a darker colour than bone from the same deposit. Similarly, Krzyskowska (1990: 63-64) claims that antler 'appears' more coarse and porous than bone, but this observation is not quantified, and is thus too ambiguous to interpret. Bone does generally take a better polish (T.P. O'Connor 1987: 7), but antler can also polish well. Moreover, some artefacts were treated with products such as oils and waxes (see S. O'Connor 1987: 11), and inferences based on lustre may thus be somewhat dubious.

Where possible, it is extremely helpful to view breaks and internal surfaces. Natural breaks are very informative features of a bone or antler artefact, as they are influenced not only by the nature of the force that acts upon them, but also by the structural nature of the material. Bone, for example, is often marked by irregular longitudinal cracking (*e.g.* S. O'Connor 1987: 11, fig. 4; Krzyskowska 1990: 58). Furthermore, if one studies enough sections and angles, one may be able to observe areas of cancellous tissue, and to view compacta from a range of directions (see Glossary for definitions).

Sonia O'Connor points out that natural surfaces can also provide useful identification criteria in archaeological material, as histological structures are often rendered distinct by

pathology, degradation, and staining. This allows analysis at low magnification, though the manner in which histology is marked out seems rather unpredictable, and is not well understood. In particular, the endosteal surfaces (inside faces) of marrow cavities may be preserved in objects such as knife handles (S. O'Connor 1987: 10). Where this is the case, nutrient foramina are often visible, with associated undulation in the bone surface (fig. 5.6). No such structure is visible in antler.

Another useful guide is gross morphology and form; something that is surprisingly frequently preserved in artefacts. In the connecting plates of composite combs one may observe small areas of porous core, the curved margin of which often indicates the presence of antler (fig. 5.7). Conversely, straight strips of spongy material of uniform thickness may represent bone, and more particularly, ribs. Bone billets are also often recognisable (see for example Mann 1982), as nutrient foramina may even be preserved in the plates, while rounded, paired areas of cancellous tissue reflect the profile of cattle metapodia, indented as they are by the median groove (fig. 5.8) (S. O'Connor *pers comm.*, see also Krzyskowska 1990: 56-57). Cancellous tissue itself, if preserved in enough quantity, is very distinctive. In bone it consists of a network of interwoven trabeculae, while the antler equivalent has a more honeycomb-like texture (fig. 5.9).

Though the growth and formation of bone and antler differ from one another (see S. T.P. O'Connor 1987; S. O'Connor 1987: 11), the techniques used to differentiate bone and antler in small objects consisting entirely of compact bone are rather subjective, and too ambiguous to interpret (*e.g.* O'Connor 1987b: 7). These methods will not be discussed herein, or applied in the thesis.

To summarise, it is important that a range of criteria is applied before reaching a conclusion. General texture, colour and logical reasoning may be used as part of a suite of identification techniques, but must not be allowed to override inferences derived from more objective criteria (such as the presence of identifiable core material). In some cases, particularly in highly worked objects such as composite combs (in which every effort may have been made to remove unsightly features such as cancellous tissue or outer surfaces), one must accept that it is impossible to differentiate the two material types, as simply not enough structure is preserved. In other cases, it is important to qualify identifications with 'probably' or 'possibly' (O'Connor 1987a: 10). Nonetheless,

at this juncture it is appropriate to ask whether identification can be taken to a higher level.

### 5.1.2 Antler species: past research

Any differences that are observed between individual antler specimens are likely to be the result of the interaction of multiple variables (see below). Nonetheless, it is clearly possible to distinguish the whole antlers of species such as *R. tarandus* and *C. elaphus*, despite the effects of factors such as age, nutrition and sex. Could it then be possible to differentiate species in small fragments of antler, from which gross morphology has been lost? Moreover, could it even be possible in highly worked objects such as composite combs?

A survey of the zoological literature revealed that surprisingly little has been published on this subject. Moreover, through correspondence with biologists and palaeontologists, the author found many experts to be sceptical regarding the feasibility of such identification (although few had attempted any such analyses themselves). Indeed, it seems that while zoologists are familiar with small variations in gross morphology, few have invested much time in study of the macrostructure of small fragments (in this respect the situation in Britain seems similar to that in eastern Europe; Lyuba Smirnova *pers comm.*).

Nonetheless, some believe that they can indeed distinguish deer species from fragments and worked artefacts. Rolf Lie's work with Birthe Weber (Weber 1992, 1993, 1994) and Beverley Ballin-Smith (Ballin Smith 1995) is the most well known example of this approach to archaeological material, but a methodology is still to be published, and many scholars are sceptical (see Chapter 2).

Ingrid Ulbricht also published an identification key in her report on the bone and antler from Haithabu (Ulbricht 1978: 16-24), while Jørgen Ilkjaer (1993: 313-319), and Lyuba Smirnova (2005: 9-15) considered the problem in their analyses of combs from Illerup Ådal and Novgorod respectively. Smirnova's treatment, in particular, merits consideration. The experience with antler fragments and manufacturing waste that she gathered in the course of her original Ph.D research (see Smirnova 1997) helped to lay the groundwork for the identification of antler to species in simple and composite

combs; a task she undertook as part of a second thesis (Smirnova 2002, 2005). The methods used by Ulbricht and Smirnova have much in common. The basics are outlined below<sup>1</sup>, and expanded upon with some observations from my personal collection and the reference material at the British Museum (Natural History). They are best applied with some appreciation of their hierarchical relationships (fig. 5.10).

### *Gross Morphology*

Although unlikely to be of direct relevance to the study of composite combs, it seems appropriate to briefly highlight the basic differences in gross antler morphology between the three species of interest (fig. 5.11), particularly as it is of interest in relation to the analysis of waste deposits.

The antlers of the red deer (*C. elaphus*) are highly variable, but can be defined briefly by the presence of a few characteristics. The most distinctive aspect is a marked branching and lack of palmation. However, it should be noted that in rare cases, *C. elaphus* may develop palmation (fig. 5.12). This is generally, though not always, related to interbreeding with Sika (*Cervus nippon*), a cervid that was recently introduced to Britain (Lowe and Gardiner 1975). The problem is discussed in a little more detail below.

In mature red deer stags, one may expect to find a brow tine (or pair of brow tines) projecting forwards from just above the burr (fig. 5.11a). Moving distally, one finds the *bez* (or *bay*) and *trez* (*tray*) tines. The end of the beam may be marked by up to three small, upwards-pointing tines, known collectively as the *crown*. The brow and lower tines may be large, but dimensions usually decrease distally.

Continental red deer antlers may reach 120cm from burr to crown tip, and have up to twenty points, but in Scotland 90cm and fourteen points would be considered good development (Krzyskowska 1990: 60). The beam has a much greater radius than that of reindeer, but fragments could be confused with elk (*A. alces*) where evidence of tines or palmation is not preserved. However, the pedicle, consisting entirely of compact bone, is much longer in red deer than in elk, and the shape of the bony coronet is oval, whereas in elk it is roughly circular (Smirnova *pers comm.*), with a 'beaded' surface texture.

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<sup>1</sup> I am grateful to Dr Lyuba Smirnova for discussion and demonstration of her identification criteria.

The antlers of the elk (*A. alces*) lack a brow tine. Most notably, they are large and heavily palmated, spanning up to 100cm from burr to tip (Huffman 2003; see fig. 5.11b). The beam area has the form of a trapezoidal wedge, and it may be that this is the stimulus for trapezium-shaped simple combs (see Smirnova 2002: 150<sup>2</sup>).

Reindeer (*R. tarandus*) antlers are quite distinctive. They are markedly asymmetrical, relatively thin in cross-section, and have a characteristic rough, grey outer surface. The males also bear distinctive 'snow shovels' for brow tines (fig. 5.11c). Also of note is the fact that their pedicles may be less than 5mm long (Li *et al.* 2003: 335). The antlers of male and female reindeer are easily distinguished, bull antler being much more elaborate and massive than cow antler. Nonetheless, there is variation within sexes, and it is possible that a rack from a young male may be confused with that of a mature female (see fig. 5.13 for an idea of size variation). More importantly, however, the antlers of reindeer as a whole are sufficiently distinctive that they are very unlikely to be confused with those of another species.

#### *Surface Texture*

The texture of the natural outer surface of antlers differs *within* species, probably in relation to factors such as nutrition, sex and maturity. Nonetheless, there is sufficient inter-species variation to allow one to use this criterion to recognise generalities that may be used to distinguish red deer, elk and reindeer.

The surface of red deer antler is usually very rough, and marked by deep channels, though there is some variability. For instance, upper tines are often smoother than the main beam, perhaps due to 'thrashing' on vegetation (Krzyskowska 1990: 60; Clutton-Brock *et al.* 1982). This smoothness was noticed in some, but not all of the material assessed for this investigation. Nonetheless, where present, the rough outer surface is extremely distinctive, and diagnostic of red deer antler. Unfortunately it is usually removed prior to the manufacture of objects (see MacGregor 1985: 58), but may occasionally be preserved even in highly worked artefacts, as on a comb billet blank from York (fig. 5.14).

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<sup>2</sup> *Contra* MacGregor (1998:20), who claims that this form evolved out of mimicry of the common horn comb design.

For its part, the natural outer surface of reindeer antler is somewhat less rough than that of red deer, and lacks the distinctive channeling, although grooves are sometimes present. The surface of elk antler features broad guttering, but this can often be differentiated from red deer antler, mainly by means of scale. The surfaces of elk antlers are scored by broad channels measuring up to 7mm across, in contrast to the <1mm wide grooves more typical of red deer (fig. 5.15).

### *Identification in Objects*

In objects, the task of isolating consistently preserved distinctive features is obviously more difficult. Occasionally, it is impossible to categorically differentiate elk and red deer, but Smirnova claims that in her experience it is always possible to identify reindeer antler, providing that a variety of criteria are investigated in combination (see Smirnova 2002: 19). Polish and texture can be valuable clues, but clearly it is difficult to quantify such subjectively-defined criteria.

Of all objects, composite combs are among the most difficult to identify, as the craftsmen that made them systematically took care to remove all undesirable areas of porous material and surface texture. However, small, less-worked areas that are useful for diagnostic purposes are occasionally preserved. On single-sided composite combs, for example, the back surface (*i.e.* the surface running along the back of the combs at approximately 90° to the front face of the connecting plate; see Glossary) is frequently useful, as it exhibits rough surfaces of billets clamped between connecting plates. Furthermore, a positive aspect actually derives from the systematic production of these objects; we can roughly position comb components within a hypothetical antler, allowing us to recognise surfaces.

### *Quantity of Available Compacta*

The amount of porous core in an antler fragment is dependent on the complex interaction of many variables (*cf.* T.P. O'Connor 1987). Although the principal factor is probably the morphological provenance of the fragment (see below), interspecies differences are quite noticeable.

Dimensions provide a useful starting point for identification, and billet widths in particular seem worthy of study. In her recent thesis, Smirnova cross-referenced billet width measurement against the raw material she had assigned to them. She found that although there was overlap, red deer and elk antler billets occupied different areas of the distribution (see fig. 5.16).

Smirnova's findings suggest that billets with widths of greater than 30mm must be elk, and that those only a little narrower than this are highly likely to consist of the same material. Indeed, some combs from Novgorod exhibited extremely wide elk antler billets (fig. 5.17). Furthermore, any object incorporating extensive quantities of antler (*i.e.* >10mm) in all three dimensions, must be utilising *A. alces*, as only this species provides sufficient compact material. Similar conclusions were also reached by Jørgen Ilkjaer (1993) in his analysis of the combs from Illerup Ådal.

In contrast, the average width of red deer billets was found to be around 20mm. Unfortunately reindeer antler billets were not numerous enough to facilitate a meaningful study of this phenomenon, but it seems likely that they would exist within a similar range to that of red deer. While there is clearly a great deal of variation, and the ranges do overlap, Smirnova's figures suggest a genuine difference between the average widths of red deer and elk antler billets.

If dimensions were used as a criterion in species identification (whether conscious or unconscious), then the suggestion that billets of particular raw materials fall into different size categories would make Smirnova's logic circular. Nonetheless, there is no *a priori* reason to dismiss her suggestion. The practical investigations undertaken as part of this thesis suggest that availability of raw material does indeed differ between species, and it seems reasonable to suggest that this would have had some bearing on the dimensions of the component parts of composite combs. Thus, while it is important that we proceed with caution, and that billet width is not used in isolation, it may act as useful supporting evidence.

### *Porous Core*

Analysis of the porous core in antler provides a much firmer basis on which to make species identifications. In elk, it is very distinctive, containing extremely fine, elongated

pores that are only clearly visible with the aid of a microscope. Indeed, in the distal areas such as the tines of *A. alces* antler, the core areas themselves are invisible without magnification. This is probably what Penniman (1952: 37) is referring to when he notes that 'elk seems to be closer-grained than reindeer'.

In red deer and reindeer antler, the pores are much rounder than in elk. The primary difference between red deer and reindeer is in the gradation to compacta (see Glossary). This is extremely gentle, with a semi-porous zone in reindeer. Conversely, the boundary is discrete in red deer (see Smirnova 2002). These properties seem likely to be key to the identification of antler material (fig. 5.18).

### *Compacta*

Unfortunately, much of that which has been written on the differentiation of red deer, reindeer and elk compacta is too ambiguous to interpret (both in text and in images). Thus, herein the key criteria will be briefly described, before being critically assessed. Ambrosiani and others (Ambrosiani 1981; Carlé *et al.* 1976) have focused on phenomena observable using high magnification microscopy (120x), while Smirnova (2005) has considered characteristics observable with the naked eye, and used thin section microscopy (12x) to identify the underlying structure responsible for such variation.

The presence and organisation of blood vessels have been cited as important identification criteria; Smirnova (2005: 11) states that reindeer antler is characterised by coarse vessels visible under low (x12) magnification (fig. 5.19). On examination of the compacta with the naked eye, this structure is manifested in the form of a rough porous texture. Smirnova argues that the rough texture lends the reindeer compacta a low propensity to polish, while its porosity fosters dark staining when subjected to contact with groundwater (Smirnova 2005: 11).

In contrast, the blood vessels identified in red deer compacta have been characterised as being very fine and '[well] organised in the longitudinal plane' (Smirnova 2005: 11). Smirnova (2002: 19) believes the fineness and regularity of these vessels (visible at 10x magnification) to relate directly to red deer compacta's apparent lack of macrostructure and ability to take a polish. In her early work on the differentiation of red deer (*Cervus*

*elaphus*) and elk (*Alces alces*) antler, Ambrosiani (1981: 103) pointed out that red deer antler had a more 'regular structure' than elk. Thus, the findings of Ambrosiani and Smirnova could be read as either supporting or opposing one another, but detailed comparison and interpretation are impossible, given the ambiguity of terminology and associated images.

Although superficially similar to red deer antler, Smirnova suggests that elk compacta has a very fine, ramified system of blood vessels when viewed in the longitudinal plane. When viewed microscopically (x12), this network can be seen to be less straight than that of red deer, yet less sinuous than reindeer (fig. 5.19). In Ambrosiani's work with Carlé and others (Carlé *et al.* 1976), it was noted that elk antler retained visible blood vessels, even some years after shedding, while red deer antler often seems to lack them. In archaeological material, elk antlers were found to preserve some of this structure as 'black threads', while red deer antler, as in modern material, was made up of an almost invisible white network. However, Ambrosiani's criteria are of limited utility, as they do not consider reindeer antler, and are dependent on high (120x) magnification.

In sum, the criteria detailed by Smirnova and Ambrosiani are difficult to utilise without further clarification. Some (Ambrosiani's preserved 'threads') are dependent on high magnification, while others (surface colour, texture, and polish) are rather subjective and unquantifiable. Moreover, though Smirnova has used thin section microscopy to demonstrate the associations between blood vessel arrangement, porosity, texture, and diagenetic staining, a clear causal relationship has not been well established. As currently understood, compacta-based criteria seem to hold less potential than other methods of identification.

### *Discussion*

Overall, the criteria discussed above have been shown to be useful in the study of antler waste and artefacts (see Smirnova 1997; 2002); they were, after all, developed in order to be of use in the analysis of archaeological material. Assuming no major relevant differences in the comb material from Novgorod and that from the British Isles, application of such criteria (perhaps with modification to account for preservational differences) to the present corpus should prove possible. The techniques have been shown to be effective on highly worked objects; indeed, it may be said that if analysis is

possible for composite combs, then it may be so for any other category of antler artefact (perhaps with the exception of highly worked pins). Nonetheless, Smirnova's criteria lie open to ambiguity, given that they are grounded in personal experience rather than empirical testing. Below, some of the perceived problems with the work are investigated in more detail.

## 5.2 Antler Species: Like for Like Comparisons

One may question whether any of the perceived inter-species variation in fact relates to variables other than species. Age, sex and environment could all conceivably have an influence, while there may also be considerable variation within any given antler (*e.g.* Whitehead 1964: 62; Chapman 1975: 132, 141-145; Lincoln and Fletcher 1984; Clutton-Brock 1989: 59, 62; see also Goss 1995; Asleson *et al.* 1996; Asleson *et al.* 1997; Kierdorf *et al.* 2000; Azorit *et al.* 2002; Kruuk *et al.* 2002; *cf.* Albarella 1997; Ashby 2004).

In order to investigate confounds such as age, sex, or environment, systematic like-for-like comparisons were undertaken. Thus, beam fragments were compared to other beam fragments, tines to one another, burrs to one another and crowns to one another. The observed intra-population morphological variation is of some zoological and archaeological interest, but is not directly relevant to the discussions herein (see *Appendix III*).

To summarise, it was found that overall length, burr circumference, and gross morphology varied with age and sex, while the effects of environment on these variables were ambiguous. The thickness of compacta and width of porous core were particularly influenced by morphological position (that is measurements were contingent upon the part of the antler studied). In contrast, Smirnova's key macrostructural criterion - the nature of the porous core-compacta transition - remained constant irrespective of such influences.

## 5.3 Antler Species: Initial Blind Trials

Though they are suggestive of minimal intra-population variability, in isolation the above investigations fail to demonstrate the replicability of the identification criteria.

The only manner in which this can be effectively achieved is via a demonstration of the accuracy (or otherwise) of the techniques in practice. To this end, a series of blind tests were undertaken on material of known species, allowing one to ascertain the reliability of the identification techniques when undertaken by a worker with a limited amount of training and a minimum of specialist equipment.

Blind tests are well-precedented in archaeological science, having been repeatedly used to investigate the validity of identification techniques over the last thirty years.

Microwear analysis has been subjected to repeated investigation (Keely and Newcomer 1977; Odell and Odell-Vereecken 1980; Newcomer *et al.* 1986; Moss 1987; Bamforth 1988; Bamforth *et al.* 1990), while more recently cutmark recognition (Blumenschine 1996), zooarchaeological identifications (Gobalet 2001), and residue analysis (Kooyman *et al.* 1992; Leach 1998; Wadley *et al.* 2004) have been investigated in this manner.

Indeed, species identification blind tests have already been conducted on archaeological comb material from Norway (Weber 1995). However, while this investigation demonstrated some inter-analyst correspondence, it did not directly test the diagnostic accuracy of the technique. It is thus timely that such an approach, using modern sample material of known species, is applied to the problem of differentiating red deer, reindeer, and elk antler.

### 5.3.1 Methodology

#### *Preparation of Material*

Antler material was collected from a range of sources in England, Scotland, and Scandinavia (see Appendix III). Due to differential access to resources, specimens of red deer and reindeer outnumber elk. However, this is not a problem in the present study, as it relates to the identification of materials imported to the British Isles. Elk were rare in Iron Age and later Scandinavia, and probably had a largely eastern distribution (Chapter 2). Moreover, trade would be better served by exploitation of the highly gregarious reindeer, rather than the solitary, bog-dwelling (and more easterly-distributed) elk. Indeed, large-scale trapping and hunting of reindeer, and the trade of their antlers and hides, is well attested in Norway from the medieval period, and may have extended back into the ninth century (Storli 1993; Anderson 1981; Blehr 1973;

Martens 1982: 41-43; Myhre 2000: 38-39; see also Christensen 1987). Thus, it is the identification of red deer and reindeer that are key here.

This material was prepared for blind tests by Michael Ashby. Following observation of and discussion with Jim Glazzard, a professional combmaker, instruction was given in the preparation and construction of composite combs, and published descriptions of the process were provided for reference (Ambrosiani 1981; Galloway and Newcomer 1981; MacGregor 1985). A steel tenon saw, workbench, vice, file and sandpaper were used.

Production of complete artefacts would clearly have been an inefficient use of time. It was decided that the best alternative would be to produce a large quantity of comb component pieces (billet and connecting plate blanks) to broadly standardised dimensions. For the first stage of the tests, reverse faces and sides of connecting plate blanks were 'blacked out' with electrical tape, so as to test the effectiveness of attempts to differentiate species based on compacta structure only, and to mimic the situation in highly-worked and finished combs.

Also produced were a number of transverse sections that represented high identification potential, and a representative sample of the debris produced in the manufacture of the comb components. Some such pieces preserved sections of external morphology, while others displayed outer surface texture. Materials could thus be categorised as 'billet blank', 'connecting plate blank', 'section', 'part-worked fragment', and 'unworked fragment' (fig. 5.20).

Once cut, fragments were boxed up according to their antler source. Subsequently, all fragments were labelled with specimen numbers, using indelible ink. Care was taken to avoid any sequential numbering that would unfairly assist the identification process. A separate database table was created to serve as a key that would articulate specimen numbers and antler reference numbers. This would facilitate checking of results upon completion of the tests, but was unavailable to the author for the duration of the analyses themselves.

## *Analysis*

On identification, all types of section ('billet blank', 'connecting plate blank', 'section', 'part-worked fragment', and 'unworked fragment') were recorded separately, allowing the success rate to be calculated for each type. Identification proceeded via three stages. Preliminary examination with the naked eye allowed a first assessment to be made on the basis of the material's general appearance. Secondly, closer examination was undertaken, using a hand-lens to identify any semi-porous transition zones and remnants of original antler outer surface. Finally, a low power microscope (x10) with reflected light was used, to look more closely for transition zones, and to examine the fine structure of the compacta. Results were recorded in a MS Excel spreadsheet, and later added into the MS Access database.

On completion of analysis, the results spreadsheet was crosschecked against the MS Access key produced at the labelling stage, and some basic statistical and graphical analyses to study the effectiveness of the techniques were undertaken. Results are discussed below.

### **5.3.2 Results**

In the following, the results of preliminary blind tests are discussed according to 'specimen type' and species. Thus, reliability may be assessed in general terms, and problems particular to species or type of cut may be discerned. The basic data are presented in table 5.1. .

#### *Billet blanks*

Without the aid of a microscope it quickly became apparent that reliable identification could not be achieved. Though it was often possible to detect transition zones with the aid of a hand lens, it was much more difficult to confidently ascertain the absence of any such zone. Similarly, it was difficult to differentiate finely porous elk core and reindeer transition zone without microscopy. Thus, this exercise was aborted for all specimens except those that retained identifiable surface texture.

When the microscope was used in conjunction with naked eye/hand lens observation, the overall success rate was 15/28 (54%). It should be noted, however, that only one

fragment was incorrectly identified, with twelve characterised as 'indeterminate'. Moreover, it is notable that correct red deer identifications were made whenever significant vestiges of porous core were visible (10/13 cases, or 83%). However, when the discrete boundary between compacta and core was not readily observable (three cases), confident identification proved impossible. With this in mind, it is notable that core material was preserved in a considerable number of these relatively thin slivers of antler.

Elk and reindeer antler proved more difficult to identify. This is not surprising, as the diagnostic criteria for these species (finely porous core and semi-porous transition zone respectively) are inherently less conspicuous than the discrete core-compacta boundary characteristic of red deer. Where reindeer was correctly identified (4/5 cases, or 80%), semi-porous material was visible. Unfortunately, some of the plates were a little degraded (probably due to antlers being left exposed for some time between shedding and collection, which may be comparable to the effects of archaeological taphonomy) and this rendered recognition of the transition zone problematic. However, identification was still possible on such billets when surface texture was preserved, with only one billet proving unidentifiable.

Recognition of billet blanks as elk was particularly difficult, as the significant thicknesses of compacta available from an elk antler make it easy to produce billets that do not incorporate any core material. Moreover, the fine porosity of the core means that when small areas are included, they may not always be recognised. Thus, the success rate for elk was lowest of all, at 1/10 (10%). One example was misidentified as reindeer, as a result of a very small area of finely porous core being mistaken for reindeer-diagnostic transition zone. Thus, it seems that caution should be applied when dealing with vestiges of core.

However, some of the specimens that could not be confidently identified were marked as 'possibly elk' given their thickness. Overall size was not applied as a criterion of identification in these tests, as all plates were cut to the same approximate size. However, investigation and like-for-like comparisons of modern antler clearly demonstrated that it is possible to produce much larger billets from elk antler than from red deer or reindeer material. Thus, it seems likely that an analysis of archaeological

material that incorporated the criteria utilised in these tests, together with an understanding of the dimensional restrictions of different antler species, would allow such large billets to be noted as 'possibly elk'.

### *Connecting plate blanks*

A useful, but somewhat subjective, guiding principle to the identification of elk antler connecting plates related to the density of the material. Just as entire elk antlers are noticeably heavier than red deer or reindeer equivalents, this is true for blanks cut from them. This phenomenon is likely to be related to the relative fineness and solidity of the core material. This helps to explain why elk antler connecting plates feel somewhat heavier than red deer or reindeer connecting plates, and yet the same cannot be said of the relatively coreless billet blanks. This proved to be a fairly reliable guide; more so than overall size, as some reindeer connecting plates were of similar size to those of elk.

Microscopic study of the structure of the compacta, without reference to nature of the core-compacta transition proved - as had been suspected - to be an unreliable method of study. Overall, of thirty-one specimens, only thirteen (42%) could be correctly assigned to species. Even more worryingly, nine (29%), were incorrectly identified. Thus, considerable doubt is thrown upon this method of identification. It is of course possible that, while ineffective on modern antler, diagenetic staining might render compacta structure more species-distinctive in archaeological material. However, for now, this must remain conjectural, and any application of this technique should be viewed with caution.

However, when tape was removed, and it was possible to consider the transition zone, together with other factors such as overall morphology and texture, the success rate increased dramatically to 23/31 (74%). Moreover, specimens for which secure attributions were not possible (2 cases) were those in which the greater part or the entire porous core had been removed. Where core-compacta transitions were visible, the success rate was 23 /28 (82%). Of the six specimens that were incorrectly identified or indeterminate, one fragment of red deer antler displayed no core, but its dimensions and thickness of compacta had led it to be inaccurately identified as elk. In such cases identification should not be undertaken. The other five misidentifications were all due to the confusion of red deer and reindeer. A secondary analysis demonstrated that they

could actually be identified correctly with little difficulty; the original mistakes may have merely related to initial inexperience, and/or human error in coding. A repeat blind test, six months later, confirmed these findings. Thus, all in all, it seems that this type of identification proved successful. Most interestingly of all, this suggests that it is equally possible to identify all three species when sufficient structure is retained.

### *Sections*

The success rate for sections was 19/19 (100%), and the same results were achieved whether identification was undertaken with naked eye, hand lens, or microscope. Identification is relatively simple when outer surface texture is preserved in addition to a section in which core, boundary zone and compacta are all clearly visible.

### *Part-worked fragments*

The success rate on these fragments (half-finished connecting plates) was 6/7 (86%). Moreover, these designations took very little time or effort. It seems that where surface texture is preserved together with internal macrostructure, identifications are relatively straightforward. In all cases, examination with a microscope supported previous identifications based on inspection undertaken using only naked eye and hand lens. The only example in which identification was impossible was a thin sliver of compacta in which no porous core or surface texture were preserved.

### *Unworked fragments*

Although the success rate here was also high (6/7 or 86%), it is a little surprising that it is not higher than that of part-worked fragments. This is due to the presence of a thin sliver of antler that, based on the nature of its outer surface texture, was clearly not reindeer, but could not confidently be assigned to either elk or red deer. The small size of the object, together with its lack of morphology, made identification difficult, and the thinness of the fragment also meant that no core material was visible. All in all, this object was not clearly identifiable, and acts as a warning against over-optimistic classifications.

## **5.3.3 Discussion**

On the basis of these investigations, species designations based on the texture, colour, or (low-magnification) microscopic structure of compacta should not be undertaken. Like-for-like comparisons failed to show that compacta structure was clearly distinctive to species, and this problem was reflected in attempts to use it as the sole identification criterion in blind tests. In contrast, where core and/or transition material was preserved and visible, the species tended to be clear. It may well be that identification based on texture, appearance, and structure of the compacta *is* possible, but if that is the case, then it is not within this author's expertise, and considerable training and experience is probably necessary in order to confidently recognise species. This would make widespread adoption of the technique impractical. It is also possible that diagenetic staining would render compacta identification more straightforward, but this has not yet been investigated, and at present there is no justification for the application of this methodology.

Conversely, the nature of core material, and of the core-compacta boundary, have considerable value. Where such characteristics were visible, the success rate for identification was 82% , and these trials were undertaken at an early stage in the investigations; further experience will surely increase reliability. It remains to assess the replicability of these results, and how easily the necessary skills may be acquired.

## 5.4 Antler Species: Replicated Blind Trials

### 5.4.1 Methodology

In order to demonstrate the ease of replicability of these identifications, a sample of thirty fragments of antler (four connecting plate blanks, three billet blanks, and three sections from each species) was collated. This subset of material was selected carefully, and included only those specimens on which areas of porous core or outer surface were visible. The initial blind trials (see above) suggested that it is only in such cases that species-level identification should be attempted. After a short period of training (thirty minutes to one hour), ten volunteers attempted to identify the material, using the criteria outlined above. The volunteers had a range of experience, but can broadly be divided into two groups; those with significant knowledge and experience of the study of zooarchaeology, human bone, or microscopy (five volunteers), and those with little or

no experience in these areas (five volunteers). The opportunity for comments on ease of use was provided.

#### 5.4.2 Results

The results were very encouraging (table 5.2 and 5.3), with an average success rate of 92.1% (c. 28/30), and a lowest score of 76.7% (23/30). Moreover, results were predictable, insofar as only one specimen (no. 57) was consistently misidentified. This was an atypical cross-section of red deer antler, and its very finely porous, semi-infilled core gave it the appearance of reindeer, meaning that it was incorrectly identified by all volunteers. It was the only such piece in any of the above investigations, and thus does not provide cause to doubt the validity of the distinguishing criteria, though once again raises the important point that identifications of small fragments should be qualified with the prefix 'probably'.

It is interesting to note that the success rates of 'experts' and 'non-experts' did not differ significantly. This suggests that identification does not require considerable previous experience or specialist knowledge. One volunteer suggested that his ability to recognise transition zones improved as the investigation went on, and would thus have benefited from a longer period of training. Nonetheless, the thirty minute introduction, coupled with good reference material and photographs, seems to have sufficed for most of the participants. This would suggest that the technique is simple enough to be quickly learned.

Despite instructions to do so where necessary, the opportunity to characterise specimens as 'indeterminate' was very rarely taken up. Indeed, only one volunteer (from the non-expert group) used this determination, and there for only a single specimen. Indeed, most volunteers intimated that they had picked up the techniques relatively easily, and had little difficulty in recognising and characterising the nature of the core-compacta transition. One volunteer suggested that colour variations had helped in guiding identifications, but this was not mentioned by others. The high success rate evidently relates to the presence of core material, and clearly visible core-compacta margins in the specimens used for the trial. In practice, identification would be difficult in any archaeological material where these characteristics were not visible. Nonetheless, there is no reason to doubt the possibility of the identification of sections, blanks, and

comb fragments to species level in archaeological material in which these features are apparent.

### 5.4.3 Discussion

These tests have proven extremely useful. They have demonstrated that there are recognisable and consistent differences between species, but have also highlighted the importance of certain caveats (see table 5.4). Identification is fundamentally dependent on the preservation of either gross morphology, outer surface texture, porous core, or the core-transition zone.

Surface texture is a reliable manner of differentiating species, as red deer and reindeer textures are diagnostic. However, such features are not frequently preserved in artefacts, and other criteria must be utilised. Conversely, species designations based on the texture, colour, or microscopic structure of compacta should not be undertaken. Like-for-like comparisons failed to show that compacta structure was clearly distinctive to species, and this problem was reflected in attempts to use it as an identification criterion in blind tests.

In contrast, the use of the nature of core material, and of the core-compacta boundary, demonstrably have considerable potential. Problems with this criterion are the possibility of confusion between the semi-porous zone in reindeer and the core itself in distal elk antler tines. If enough is preserved, the two may be distinguished, but if only vestiges are preserved in artefacts, and the morphology of the core itself is not visible, then identification is less assured. However, while this issue requires further investigation in future, it is not a serious problem for the purposes of the current study, given that elk is unlikely to be represented in British material (see Chapter 2).

Palmate areas of elk antler have a coarser porosity than the tines (fig. 5.21), and one which - when only present in small quantities - could conceivably be confused with finely porous red deer or reindeer core. Where such palmation has been used, its identification may become one of probability rather than one of absolutes. Thus, a small reference collection is essential in differentiating species, and one must always err on the side of caution. Identifications should be qualified with terms such as 'probably',

and supporting criteria should be used where possible (e.g. size of component, surface texture, compacta structure etc).

Notwithstanding the above caveats, providing that microscopy is used, the like-for-like investigations showed that *inter-* and *intra-*species differences are clearly distinguishable. Moreover, the initial blind trial demonstrated that the latter are consistently reproduced, and represent reliable identification criteria, while the replications have shown that the requisite macrostructural knowledge and skills can be developed in a relatively short period of time. Thus, given their potential for expanding one's understanding of exchange and social issues, these techniques now seem very attractive. Further investigation is recommended; image analysis in particular may help to ascertain the validity of fine core porosity as a diagnostic feature of elk antler. However, the fundamentals of the technique as laid out herein seem practicably sound.

## 5.5 Application to Scottish and English Combs & Production Debris

All in all, a tripartite system of identification seemed appropriate. Where gross external morphology or outer surface texture were preserved, a *definite* species identification could be provided. Where surface texture was not present, but core or transition zone macrostructure was preserved and visible, a *probable* identification was made. Criteria such as component size, compacta structure, texture and colour could be used to support such assertions, but were insufficient criteria for identification in their own right. Thus, where gross morphology, surface texture, or core-compacta macrostructure were not preserved, an *indeterminate* assignation was made.

Taking the findings of these tests into account, species identification in the corpus of combs studied in this thesis worked along the following lines:

- Probable designations were given based on core structure and nature of core-compacta transition;
- Definite designations were given when diagnostic outer surface texture is preserved.

Texture and colour were not taken into serious consideration when investigating species. However, dimensions were thought to be of some potential, at least in distinguishing elk from other species. Thus, if components were clearly composed of antler, and were considered too large to be of red deer or reindeer, then the material was characterised as 'indeterminate antler', qualified with a note that it was '*possibly elk*'.

It seems that much depends on the number of combs that retain vestiges of surface texture transition zones, or porous core. During these tests, it became clear that the best section for the differentiation of the three species is the transverse section. Moreover, when studying connecting plate blanks, it was invariably the ends of the plate that proved most useful in identifying transition zones. This is extremely encouraging, as archaeological combs often display exposed plate ends and transverse sections created by breakage; probably more frequently than large areas of the reverse face of a plate are visible. The degree to which the diagnostic features were preserved remained to be seen, but this is covered in Chapters 7 and 8.

## Chapter 6: The European Comb Corpus

### 6.1 Formulation of a Typology

In chapters 7 and 8, a sample of combs from northern England and Atlantic Scotland is recorded, analysed, and compared, with the aim of elucidating the transmission and manipulation of style, and thus the role of combs in the construction and maintenance of identity between the pre-Viking Age and Middle Ages. In this research, analysis will take place at both *type* and *attribute* levels. The problems of the typological approach were outlined in Chapter 3, and one alternative would be to return to first principles, disregard the traditional typological approach, and attempt a comprehensive analysis based entirely on attributes. However, early research (*e.g.* Wilde 1939), and the work of the last thirty years in particular, have left a substantial typological legacy (*e.g.* Tempel 1969, 1979; Davidan 1977; Ulbricht 1980; Ambrosiani 1981; Curle 1982; MacGregor 1985; Wiberg 1987; Flodin 1989; Foster 1990; Luik 1998; Smirnova 2005), and, unless legitimate grounds for its discard can be found, it would be counterproductive to fail to refer to existing types in some way. Though often implicit, general consensus on the classification of combs exists within broad regions and periods, and most of the typologies, when subjected to critique, do have a basis in genuine associations of attributes (rather than being insecurely based on preconceived categories). Indeed, some work quite well (see below), and have an important utility in dating for particular regions. However, many of these typologies suffer from their limited applications; they are based predominantly upon single sites (*e.g.* Ambrosiani 1981), or are restricted in terms of date, geography, or morphology (*e.g.* Flodin 1989). Indeed, it has proven difficult to develop a generic comb classification equally appropriate across northern Europe (see Smirnova 2005: 23). The only survey known to the author that covers combs of a diversity of forms from widely varying European contexts, is that outlined by MacGregor (1985: 73-96; Chapter 2 this thesis). Useful as this scheme is, recent finds, and those from well-dated contexts in particular, are such that it would benefit from augmentation and adjustment.

Thus, in this section, a new typology is designed explicitly for use in the British Isles. Though the thesis focuses on the period AD 700-1400, an understanding of the development of northern Britain's comb forms is fundamental to their interpretation, and for this reason combs from the period between c. AD 300 and 700 are also included in

this classification. Moreover, as some of the combs recovered at sites in the British Isles are probably imports (from Scandinavia in particular), this typology must include virtually all northern European comb forms. Therefore, it is necessarily informed not just by MacGregor's classification, but by those attributed to Ambrosiani, Curle, Dunlevy, Tempel, Luik and others. It is distinguished from continental typologies in that it includes western forms, and from most other British-based schemes in that it covers the full chronology between AD 300 and 1400.

As noted in Chapter 3, the types combine chronological, chorological, and stylistic (cultural) dimensions, but these are not assumed *a priori*. The typology is simply a classification based on form and decoration, to which chronological and chorological significance can then be attached. The stylistic significance of the types will be addressed in later chapters. This typology allows a base-level analysis of the combs from England and Scotland, before investigations progress to higher resolution through the analysis of discrete attributes. The basics of the typology are outlined in table 6.1 and fig. 6.1, while appendix plates 1-14 show good examples of each type.

Type 1 combs are composite single-sided combs united by their low length : height ratio, and frequently elaborate ornament. Type 1a combs are small, ornate, triangular or round-backed single-sided composite combs, usually dated to the Late Antique and early Saxon periods (*e.g.* Roes 1963; MacGregor 1985: 83; West 1985: 126-127). This thesis does not focus on these combs, but the group is important as it represents an earlier phase in the European combmaking tradition from which many later types emerge.

Type 1b combs are single-sided forms with 'extra' connecting plates (*i.e.* 3 or 4 plates in total). Such combs have been referred to as Frisian in origin, though an Anglo-Saxon origin is perhaps more likely (see Hills 1981; fig. 6.2), and their similarity to type 1a suggests that this formed their basic template. They are relatively long-lived, and thus show some development within the type. MacGregor (1985: 85-87) suggests that they date between the late fourth and eighth centuries, with small, highly ornate zoomorphic forms at the earlier end of this range. Those recorded in the present work (chapter 7) tend to be slightly less ostentatious, but nonetheless represent a high level of craftsmanship.

Ornate, high-backed composite combs, such as those recorded by Curle (1982: 22-24) and Dunlevy (1988: 356-358, 'class C'), make up the type 1c. MacGregor (1985: 87-88) suggests a date between the fifth and eighth centuries for this class, and it seems likely that they are developed out of type 1b, though the context in which this may have happened is uncertain (see below).

Type 2 combs are single-sided composite combs, and differ from type 1 in that they are long in relation to their height. The type may be divided up into two subtypes, both of which have been traditionally dated to a period between the fifth and eighth centuries. No doubt they developed out of type 1a (and 1b) combs, as 'hybrid' examples attest (fig. 6.3). In detail, type 2a combs are characterised by flat connecting plates, frequently carved from split bovid ribs, and are of rather rudimentary manufacture. They are common finds at seventh to eighth century sites in England (*e.g.* Addyman and Hill 1969; Rogers 1993; Ashby and Spall 2005). The well-known 'hogback' or 'winged' combs come under class 2b. Such combs frequently feature large, flared endplates, often with zoomorphic carving, and connecting plates have a concavo-convex profile. They are commonly dated to the seventh and eighth centuries, though MacGregor (1985: 87) notes the existence of some Viking Age examples. It should be stated that certain Viking Age combs with connecting plates of *plano*-convex profile have occasionally been described as 'hogbacked'; this definition is not applied herein.

Type 3 encompasses asymmetric and handled combs (see MacGregor 1985: 87, 91-92, Hodges 1980; Alexander 1987; Riddler 1990, 1998). In England, handled combs (dated to between the eighth and eleventh centuries, Riddler 1990) have been divided into those of 'northern' and 'southern' construction (the billets of the latter being secured within a slotted antler tine, rather than between connecting plates; see Alexander 1987; Riddler 1990: 9, 1998: 189), but the geographical distinction is by no means clear. Asymmetric combs, in which one endplate is devoid of teeth, and thus provides a handhold, are known on the continent (Roes 1963: Plate 29) and, in smaller numbers, in Scandinavia (*e.g.* Birka, appendix plate 8b). They seem to date to the eighth and ninth centuries. Thus, insofar as that handled and asymmetric combs are broadly contemporaneous skeuomorphs (see Riddler 1998: 189), it is appropriate that they are studied as a single group.

Type 4 consists of 'riveted mounts'; short, roughly hewn strips, usually of bone, fastened with two, three, or four iron rivets, and possibly representing the remains of horn combs (see Biddle 1990a; MacGregor *et al.* 1999: 1952-1954). They are clearly a discrete group, being apparently restricted to large settlements in England, where they are found in tenth to twelfth-century phases (Biddle 1990a; Pritchard 1991: 199; MacGregor *et al.* 1999: 1952; Riddler 2004: 63-64), though they have not always been recognised as the remains of combs, and require some discussion (see below and chapter 7).

Type 5 combs are characterised by their large size (complete examples are generally over 18cm in length; see Tempel 1969: 92), and connecting plates with a plano-convex profile and shallow plano-convex section. The group includes those examples commonly known as Ambrosiani A combs (dated to the period c.AD 800-950, Ambrosiani 1981: 25, 62-63), but is rather more broadly defined than this. Indeed, it takes in a number of Scandinavian and Frisian variants, such as the very large, ornate 'horse combs', and pre-Viking antecedents (stretching back to the eighth century, see Tempel 1969: 75-91; Ambrosiani 1981: 68-69). Type 6 corresponds to the Ambrosiani B combs characteristic of the tenth century (Ambrosiani 1981: 62, 64); short combs with connecting plates that have plano-convex profiles and a deep plano-convex section. Ambrosiani's proposed A/B distinction based on the connecting plate width : thickness ratio is not followed herein, as experience has shown this strictly quantitative approach to be misleading. This ratio *does* seem to alter along comb length (*contra* Ambrosiani) at least in some cases. A more important metric distinction relates to the overall dimensions of types 5 and 6 (see Smirnova 2005: 22-23); type 6 combs are much shorter than type 5, being between 10 and 15cm in length; see Tempel 1969: 92). The distinction will be further discussed below.

Nonetheless, in the face of such ambiguity, it seems important to test the legitimacy of the distinction between types 5 and 6. For this purpose, a sample of combs from Birka was subjected to correspondence analysis. No clear patterns were visible on correspondence plots using the second and third axes, but when one plots the first and fourth axes, an interesting distribution curve appears (**fig. 6.4**). The sharp division between the types suggests two broad groups, rather than a true seriation. The first axis largely represents the long, straight profile (type 5) and the use of copper alloy rivets (type 6)<sup>1</sup>, while the main contributions to the fourth axis seem to be decorative motifs (see **table 6. 2**).

However, the distribution of combs on the CA plot does not seem to relate closely to Ambrosiani's subdivision of types 5 and 6 into A1-3 and B1-4, and fine chronology is not forthcoming. Thus, the simple categorisation of these combs into the broad types 5 and 6 seems valid and appropriate.

Type 7 combs are characterised by a deep plano-convex connecting plate section that might cause them to be mistakenly referred to as Ambrosiani B combs (class 6). Their form differs from type 6 in that they are larger (fig. 6.5), and that they are less uniformly manufactured, displaying a range of irregular profiles. Some have connecting plates of marked concavo-convex profile, while others are straight. In general, classification of a given comb as type 6 or 7 is relatively straightforward when based simply upon overall morphology and dimensions (see Chapter 4). Type 7 can be distinguished from type 2b on the basis of a deeper connecting plate section in the former, a more restricted range of decoration, and a lack of flared endplates, but it may well be seen as a progression from this more ornate precursor. In Dunlevy's classification, type 7 combs fit into Class F2, which she dated to the late ninth to twelfth centuries, though on the basis of sites such as Coppergate, most examples can surely be assigned to the years between AD 900 and 1100.

Type 8 combs are united by their similarity to types 6 and 7 in general form, but they differ from these in terms of connecting plate section and ornament. Overall, the group dates to between the tenth and thirteenth centuries. Type 8a, which are characterised by connecting plates of triangular section, and 8b combs, which have connecting plates of trapezoidal section, date to the tenth to twelfth centuries. Their relationship is difficult to establish in detail, but they seem to have been broadly contemporary. Type 8c combs may represent a simplification of type 6, as they have a deep plano-convex section, but their shape is much more square and less elegant, and they lack ornament. In Dunlevy's Irish corpus, they fit into Class G (Dunlevy 1988: 367-368), which she dates broadly between the ninth and thirteenth centuries. However, they seem much more common towards the end of this range, and large, well-dated collections from Waterford and Cork suggest that most can be placed in the twelfth and thirteenth centuries.

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<sup>1</sup> However, it should be noted that in England, Scotland, Ireland, and Denmark type 6 combs tend to be fixed with iron rivets.

Type 9 combs are finely cut, single-sided combs, characterised by a lack of complex incised ornament, and by the decorative use of copper alloy riveting. From around the eleventh century, type 9 combs are common across Scandinavia, being well represented at Trondheim (Flodin 1989), Oslo (Wiberg 1987), Bergen (Grieg 1933: 223-233), Kungahälla (Rytter 1991), Sigtuna (Ros 1990), Lund (Mårtensson and Wahlöö 1970; Persson 1976), Ribe (Andersen 1968; Feveile 1992; Feveile and Jensen 2000), and Schleswig (Ulbricht 1984), and are also present in much of Atlantic Scotland (Curle 1982; Batey 1987; Buteux 1997), Iceland (Amorosi 1992: 121, figs 7-9; K. Milek *per comm.*), Estonia (Luik 1998) and western Russia (Smirnova 2005: fig. 3.36) from then onwards. Their detailed chronology is unclear, but they may be broadly dated between the late tenth and thirteenth centuries. Indeed, this class is diverse; Flodin (1989) breaks up Wiberg's groups into smaller subtypes, largely on the basis of ornament, but for the sake of simplicity this is not attempted herein; in most cases type 9 combs will simply be referred to by their Wiberg type, and, where necessary, a description<sup>2</sup>. Such an approach allows for backwards comparability (table 6.3; figs 6.6 and 6.7). Further clarification is provided in the form of correspondence analysis of a sample of the Trondheim combs studied by the author (see below).

Though Wiberg's typology is retained herein, a number of qualifications must be made. The division between types E1 and E2 is based solely on riveting practice, and as such represents a difference in manufacturing technique, rather than overall form or ornament. It is thus of limited value in the present classification (though riveting technique is considered elsewhere in this thesis, see chapters 4, 7 and 8).

The group E3 is also of limited use, as it incorporates both type 9 and type 6 combs. Though type 6 combs in Trondheim *do* have copper alloy rivets, they differ fundamentally from type 9 combs in both form and use of incised ornament. As these combs are not recognised as a discrete type in Wiberg's scheme, their precise date at Oslo or Trondheim is not easily ascertained, though type E3 as a whole is present from late tenth and eleventh-century phases.

The 'true' type 9 combs in type E3 have a much straighter profile than type 6, and share some similarities with type 8c, though unlike the latter, they are riveted with copper alloy.

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<sup>2</sup> The exception is Flodin's subdivision of type E5, which has some utility in the recognition of spatial

Given the lack of ornament on either type 8c or type 9, the choice of rivet materials (which is invariable in each region) is important. They are broadly contemporary, but the two combs clearly developed out of different regional traditions. They are thus best viewed as direct equivalents, though in which direction the influence moved is unclear.

Type E4 is differentiated from the 'true' type 9 E3 forms in that they are fitted with many decorative close-set rivets; a pattern not frequently seen in combs manufactured in English or Irish contexts. Type E5 is an extremely broad group, characterised by connecting plates of complex, plano-piriform section, often partly covered with copper alloy plating. Given this diversity, the group cannot be understood as a collective, and use of Flodin's (1989) subtypes is justified (table 6.4)

Types 10-13 differ from 1-9 in that they are double-sided composite forms. Type 10 are highly distinctive, ornate double-sided combs with differentiated teeth, often with denticulate end profiles, and complex geometric or zoomorphic ornament (see Thomas 1960). They are known primarily from Roman contexts in the British Isles and northern Europe, and will not be discussed in detail in this thesis, although they were presumably the model for type 11 (see Chapter 8).

Other double-sided combs are herein categorised as types 11, 12, and 13. Type 11 combs are ornate double-sided composite combs with straight ends, iron rivets, graduated, undifferentiated teeth, and bevelled connecting plates (Curle's Type A, and Dunlevy's Class B), frequently decorated with multiple horizontal lines of motifs. Dunlevy's Class B conflates examples of types 10, 11, and (possibly) 13, such that her date range is rather broad, encompassing the period between the third and tenth centuries. Type 12 combs are longer (fig. 6.8), much more rudimentary, and sometimes unornamented double-sided combs with undifferentiated teeth and iron rivets. Traditionally, they have been dated to the period between the fifth and eighth centuries (*e.g.* Roes 1963: 14; West 1985 : 128).

Type 13 combs are finely-cut, double-sided combs with differentiated teeth, and no complex incised ornament. The vast majority are fixed with copper alloy rivets, and it is common for these to be applied in a decorative manner, often being closely set, in pairs, or in double rows. The group incorporates a diverse array of forms, which, as for type 9,

are best classified according to Wiberg's (1977) criteria, not least because the typology has already been widely applied on material of this date. The most notable application is Flodin's (1989) analysis of the Trondheim material, but Luik's (1998) Estonian scheme bears many similarities, and the classification has also been alluded to by Clarke and Heald (2002). Wiberg's scheme is summarised in **table 6.5**.

A correspondence analysis of Scottish double-sided combs demonstrates the legitimacy of the distinction between types 11, 12 and 13 (**fig. 6.9**). The early medieval forms (11 and 12) separate out very clearly from those conventionally seen as of later medieval date (13), and 11 and 12 themselves plot in separate areas of the graph, with a very small area of overlap.

The key variables expressed in figure 6.9 are enumerated in **table 6.6**. The highest contributions to the first axis of variation are provided by decorative scheme 2H (blank; type 12) and copper alloy rivets (type 13), while the second axis largely relates to variables such as occurrences of central riveting (type 11), decorative scheme 2D (multiple lines of motifs; type 11), endplate form 2F (complex, type 11), and interestingly, the use of reindeer antler (type 12).

It may be possible to assign a closer chronology to the CA clusters, through reference to particular combs (numbered points on graph). Unfortunately, no unambiguous discussion of the dating of double-sided composite combs across the region has been published. It is therefore necessary to proceed from first principles, and seek the few known dated examples.

Unfortunately, secure contexts for type 11 combs are few. Nonetheless, it is notable that type 11 combs 1260, from the Broch of Burrian, and 1059, from Buckquoy, sit close to the type 12 threshold, while 1318, 1330, and 1331, all from Buiston crannog (see MacSween 2000: 143-14) plot reasonably close together, at some remove from type 12 combs. One can be confident that the combs from Buiston date to the seventh century. Though this site seems to have had extended, intermittent periods of occupation between the turn of the first millennium and the seventh century AD, these combs come from Munro's early excavations, and, based on association with a timber palisade dendrochronologically dated to AD 630 (see Barber and Crone 1993: 111), they are likely

to date to the latter two thirds of the seventh century. Conversely, those from Burrian may date to the eighth century, based on artefactual parallels, but this is insecure, as stratification is lacking. In Ireland, type 11 combs have been recovered from fourth to fifth and seventh to ninth-century deposits at Lough Gara and Lagore respectively (Dunlevy 1988: 355-356), but none from recent excavations are known to the author.

Type 11 combs are also known from contexts dated as late as the end of the tenth century in Ireland (Dunlevy's type D1-2; Dunlevy 1988: 358-360). Perhaps the relationship between types 11 and 12 is more complex than a simple progression from one to the other; at the very least a period of overlap is likely; the two co-occur at the Brough of Birsay, for example (Curle 1982), but the stratigraphy at this site is very poor. The chronology of type 10 is likely to be key, and it is possible that the two forms emerged parallel to one another out of this late Roman precursor. A detailed study of the chronology of type 10 would help to clarify the relationship, but this is not the place for such a survey.

Dates from type 12 combs are generally no less ambiguous, but a few are helpful. Comb 1036, from Saevar Howe, is dated on stratigraphic grounds to the pre-Norse period (*i.e.* eighth century), while comb 1010 comes from a late Phase 8 (stage 4) context at Howe, Stromness. This stage is radiocarbon-dated (on wood charcoal) to 1565+/- 45 bp (GU-1749), or AD 400-600 when recalibrated at the  $2\sigma$  confidence level, using Reimer *et al.*'s (2004) curve. However, phase 8 may actually relate at least in part to the ninth century (see Barrett 2006), as the structural sequence seems to be extremely long-lived, and a date on animal bone from a stage 5 floor level (stratigraphically just above that containing the comb) points to the Viking Age (GU-2347, 1170+/-50 bp, or AD 710-990 calibrated to  $2\sigma$  using Reimer *et al.*'s (2004) curve. The degree of disparity between the dates suggests a considerable stratigraphic break, so it may be that comb 1010 is from a pre-Viking context, even if the phase continues into the ninth-century. Alternatively, it may indicate that at least one of these samples is not giving a true date for the formation of its context. The case remains unresolved. Unfortunately, the uppermost levels of phase 8 are undated, but, as Barrett (2006) has pointed out, the presence of elements of material culture and economy usually seen as 'Norse' (a gaming board, and use of flax) are suggestive (Ballin Smith 1994:188, 131-2; see also Bond and Hunter 1987; Sørensen 2001: 102).

Type 12 combs 1058 and 1057 from Buckquoy were recovered from phases IV and V respectively (see Ritchie 1977: 196). Ritchie dates both phases to the Norse period on the basis of very general architectural typology (the buildings are rectangular), but possible support comes from the facts that phase IV contained at least one gaming board (Ritchie 1977: 187), and phase V two imported glass beads (Ritchie 1977: 189). Gaming boards are often cited as 'Norse'; but a pre-Viking use also seems possible; examples are known from Coppergate, York (Mainman and Rogers 2000: 2565) Ballinderry crannog (Kendrick 1933; Hencken 1936: 175-181), and Red Craig, Orkney (Morris 1989: 220-221). Beads are important finds from the Viking period (Callmer 1977; Trotzig 1988), with forms similar to that from Buckquoy known from a number of contexts in Norse period Atlantic Scotland, including the Brough of Birsay (Hamilton 1956: 183; Curle 1982: 71), Quoygrew (Barrett and Gerrard 2002), and Earl's Bu (Batey and Morris 1992: 38). Although beads are known from Anglo-Saxon contexts (Guido 1999), they are less common in pre-Viking Scotland. While this evidence is somewhat equivocal, it is nonetheless important to note that the sequence was sealed by a coin-dated tenth-century burial (Ritchie 1977: 190). All in all, however, none of these combs are tightly dated, making it difficult to demonstrate that type 11 combs were current before type 12, as has been previously suggested (first implied in Curle 1982: 22, 56-58).

Type 12 combs are known from England (see chapter 7), where they have been traditionally dated to the period between AD 400 and 800. Though Curle (1982: 57) briefly noted this similarity, the wider context of type 12 combs has not yet been fully considered (though see Smith 2003: 114). The frequency of type 12 combs in Ireland is difficult to ascertain, as the material was not available for study, while Dunlevy's typological criteria were not sufficiently explicit to allow a thorough analysis based purely on published literature. Dunlevy considered her Classes D1 and D2 to reflect a nexus of 'Saxon' and 'Irish' influence, and though her illustrated examples fit best into type 11, the average dimensions cited (40-60mm in height x 90-120mm in length) are more in accord with type 12. However, there are no type 12 combs known from Ballinderry or Lagore (Hencken 1936, 1942; 1950), while Ian Riddler (pers comm.) has seen no examples of this form in Irish collections. One may conclude that type 12 combs were not known in Ireland, or more tentatively, that they can only have been introduced on the smallest of scales, whereupon they were rapidly assimilated into the native milieu.

Examples of type 13 from dated contexts include combs 1708 and 1709, from Mounds 2 and 2A at Bornais (South Uist, Western Isles). Few other largely complete type 13 combs from Scotland have secure, published dates, and it therefore seems most appropriate to draw their chronology (with reservations) from that established in Norway (Wiberg 1977; Flodin 1989). In order to clarify this sequence, correspondence analysis of a sample of combs from Trondheim is undertaken later in this chapter (see below).

Finally, type 14 double-sided combs differ from all previous types in that they are cut from a single section of material (herein 'one-piece'). Type 14a are united by their considerable thickness (often over 10mm), as they are often carved in ivory or elk antler. Large, ornate examples are common in eleventh- and twelfth-century contexts from Scandinavia, central Europe and eastern Russia (*e.g.* Ulbricht 1978; Luik 1998; Smirnova 2005), while smaller variants are known (if not common) in the British Isles, where they occur in deposits of similar date. There is some variation within the type, but further classification would be dependent upon a detailed study of Scandinavian and north European examples, which is beyond the scope of this thesis.

Combs of type 14b are rudimentary in construction, morphologically rather uniform, small in size, and lacking in complex ornament. They are common from the fourteenth century onward in England, and are also known in Scotland and Ireland. The type 14c is used to encompass all highly ornate variants of type 14b, including the so-called 'liturgical combs'. Herein the term 'type 14c' is preferred, as it carries no functional assumptions.

## 6.2 The Distribution of Comb Types in Space and Time

In order to provide a broad range of comparanda, and to set the chronological and geographical context, published data from a number of European sites were studied. These analyses will only be briefly discussed, as in many cases data are lacking, while a good synthesis of many of the studies of Viking Age sites was carried out by Ambrosiani (1981). An extremely detailed survey was also undertaken by Tempel (1969), but it has been suggested (Smirnova 2005: 22) that Tempel's classification is overly complex, and provides little clarity. Moreover, Tempel's survey was restricted in time (seventh to twelfth centuries) and space (though covering Scandinavia, Frisia, and central Europe, it

did not consider British and Irish material), while some of his *Formengruppen* relate to morphotypes absent from the UK corpus.

Equally important, since 1969 large urban excavations have been undertaken at sites in towns such as York (Hall 1994), Southampton (Morton 1992; Andrews 1997; Birbeck 2005), Dublin (O' Riordáin 1976b; Walsh 1997; Simpson 2000; Wallace 2001), Ribe (Jensen 1991; Feveile 1992; Feveile and Jensen 2000; Bencard *et al.* 2004), Trondheim (Christoffersen and Nordeide 1994), and Novgorod (Brisbane and Gaimster 2001), with good comb corpora and analyses published from many of these (Ambrosiani 1981; Flodin 1989; MacGregor *et al.* 1999; Smirnova 2005). Thus, it seems appropriate to attempt a new analysis using the UK-centred typology outlined above, extending the survey to incorporate the islands of Great Britain and Ireland, and covering the period of interest in this thesis: the eighth to fourteenth centuries. Table 6.7 outlines the distribution of comb types from a selection of important and well-known European sites, and in the text below, important, unusual, and interesting variations will be considered, with the aim of charting spatial and chronological variability. In the following chapters, a subset of the European corpus will be discussed in greater detail. Chapter 7 will focus on combs from northern England, particularly York, Lincoln, and the surrounding area, while Chapter 8 considers the data from Scotland, which is clustered around the northern and western coasts and islands.

### 6.2.1 Scotland

Despite the quantity of recorded material, the situation in Scotland is difficult to assess, given the lack of sites with well-stratified, tightly dateable deposits. Moreover, most of the comb corpus relates to Atlantic Scotland, which will be the focus of Chapter 8. Nonetheless, it is appropriate to briefly review what is known of combs from past published reports. Unpublished material studied by the author will be considered later.

Sites with combs from phases dated to the pre-Viking period include Buiston crannog, Ayrshire (Crone 2000), the Howe and the Broch of Burrian, both in Orkney (Ballin Smith 1994; MacGregor 1975), Scalloway, Shetland (Smith 1998a), and Dun Cuier, Barra (Young 1956). Combs from these sites include examples of types 1c, 11, and 12. 'Transitional' or 'Early Viking' phases at sites such as the Brough of Birsay (Curle 1982), Saevar Howe (Hedges 1983), and site 2, Skail, Deerness (Porter 1997) (all Orkney), have contained a

mixture of comb types, including types 1c, 12, 5, and 6. There are also a number of sites with Viking Age phases dominated by combs traditionally seen as 'Scandinavian' (such as type 5). These sites include settlements such as Jarlshof (Hamilton 1956) (Shetland), and a number of furnished burials (*e.g.* Thorsteinsson 1968; Owen and Dalland 1999a). Sites dated to the late Viking Age and medieval period, such as those at Freswick Links (Caithness) (Batey 1987) have been dominated by combs of forms 9 and 13. However, it should be noted that stratigraphy is lacking at many of these sites, and that as a result the dating of these artefacts is based to a large degree on European parallels. Nonetheless, material from recent excavations in Atlantic Scotland seems to broadly support the pattern (*e.g.* Quoygrew and Pool, both in Orkney, Barrett and Gerrard 2004; John Hunter *pers comm.*). Western Scotland is more difficult to assess, as important collections from the Udal, Kilpheder, and Bornais are yet to reach full publication (though see Sharples 2005). Nonetheless, the small corpus from Whithorn demonstrates the importance of type 8 combs in this region (Nicholson 1997).

### 6.2.2 England

Most of the important sites of northern England are covered in the main analysis (see Chapter 7), but a brief introduction to what is already known about the corpus seems appropriate. Without doubt, one of the most important collections is that from York, where there is comb material from contexts dating between the Roman and postmedieval periods, though the majority can be assigned to the tenth and eleventh centuries. In pre-Viking phases at Fishergate and Blue Bridge Lane (Rogers 1993; Spall and Toop 2005), combs of type 1b, 2a, 2b, 3, and 12 are known, but single-sided forms outnumber double-sided combs 4:1. At Viking Age Coppergate, High Ousegate, and the Lloyd's Bank site, types 3, 4, 6, 7, 8a and 8b were identified, with rare examples of types 2a, 9, and 12. A single (possibly intrusive) fragment of type 13 was recovered from an eleventh- to twelfth-century context in phase 6 at Coppergate. Collections from later medieval sites such as the Bedern, are characterised by type 14b combs.

Another important collection comes from Lincoln, but despite a substantial catalogue of publications on the archaeology of the town (*e.g.* Perring 1981; O'Connor 1982; Dobney *et al.* 1996; Jones *et al.* 2003), little has been written on the combs. The exception is the small corpus from Flaxengate (Mann 1982). Here, combs come from levels dating to between the ninth and eleventh centuries, but in many cases individual finds cannot be

securely dated. Moreover, they are heavily fragmented, so that assignation to type is difficult. Nonetheless, it is possible to say that types 3, 4, 6, 7, and 8 are represented, while types 9, 13, and 14 are notably absent from the site.

Material from the north-west is less well-known. Despite the presence of important settlements, harbours, and market sites in this region (Meols and Chester are of particular note, see Griffiths 1992a; 1992b; 1996; Carrington 1996; Ward 1988), few combs are known from the area, and none are well-published. This problem is further exacerbated when one considers that the Isle of Man, an area of otherwise well-evidenced Norse activity, has very few combs. No combs were recovered during excavations at St Patrick's Isle, Peel (Freke 2002: 305-307). Similarly, no combs from Llanbedrgoch, Anglesey (Redknap 2000: 83, fig. 125) have been published. In all, due to a combination of disadvantageous soil conditions and a lack of controlled excavation, the comb corpus on Man and the east coast of the Irish Sea is diminutive.

Further south, combs from London have been rather inconsistently published, but the majority of examples from excavations in the city seem to relate to the pre-Viking and medieval periods (see Blackmore 2003: 30). Type 3 and 12 combs are known from Middle Saxon Lundenwic (see Riddler 1990, 1998; Malcolm *et al.* 2003: 174; Blackmore 2003: 311), while types 5, 6, and 7 are scarce (Pritchard 1991: 194-199). This may reflect a lack of excavation of ninth- and tenth-century sites, or may relate to a genuine absence of the types in 'Late Saxon' (Viking Age) levels.

Pritchard (1991: 195) notes the contemporaneous use of single- and double-sided forms in the tenth century, though secure contexts are few. A small fragment of type 5 (Ambrosiani A2) comb was found at St Peter's Hill, where it was residual in a twelfth-century deposit (Pritchard 1991: fig. 3.75), but this is an isolated example of the type. Pritchard mentions no examples of types 3 or 6, but Riddler (1990) has shown the former to be present in some numbers in ninth to eleventh-century London, while an unusual comb case component (Pritchard 1991: fig. 3.83) may relate to the latter. A type 7 comb has been recovered from a pit at Pudding Lane securely dated to the tenth century, while there is a similar find from nineteenth century investigations near the Mansion House (Pritchard 1991: 195-196), and a number of type 7 and 8b combs from late eleventh and twelfth-century waterfront deposits (Riddler *pers comm.*). Type 4 combs are also

represented, most notably by an example from Milk Street that not only retains its horn component, but was found in a pit securely dated to the tenth century. This example thus provides the best evidence yet for type 4 riveted mounts as representatives of horn combs. Fragments of double-sided (probable type 12) combs are known from tenth-century contexts at Milk Street (Pritchard 1991: 199), and from undated levels at Threadneedle Street (Smith 1909: 165).

Combs from late medieval deposits include type 14b, and the importance of boxwood combs from the twelfth century is clear. Composite combs are scarce, though occasional finds of types 9 and 13 have been made (see for example Smith 1909: 165; Egan and Pritchard 1991: 368).

Late Saxon Southampton is similarly poorly known, as it lies beneath the modern city. However, much more can be said about Middle Saxon (late seventh to early tenth century) Hamwic (Addyman and Hill 1969; Holdsworth 1976; Holdsworth 1980). Here, most combs fit into the 'pre-Viking' canon, being of types 12, 2b and 3, while types 5 and 6 are conspicuously absent (Addyman and Hill 1969: 75-77). Finds from recent excavations ahead of the construction of St. Mary's Stadium, Southampton are few, with little evidence of bone/antler working on a significant scale (Every and Loader 2005: 139). Fragments of a maximum of around forty-one combs were recovered, thirty-three of which are double-sided (presumably type 12), the remainder single-sided or of unknown form. Unfortunately, the combs are not illustrated or described in detail, and the only illustrated example (ostensibly a 'fish tail' comb) is clearly a comb case (see Every and Loader 2005: fig. 63, 11). At Winchester, a small but diverse corpus includes types 7, 8a, 8b, 14b, and a possible type 3 fragment, as well as ten finds of type 4 riveted mounts, and a case for a type 6 comb. There are also two fragments of type 1b combs (not type 1c as implied by their 'Celtic' attribution in the text; Galloway 1990b: 667).

This collection suggests a paucity of types 5, 6 and 7 in the south of England, though well excavated and published sites of Late Saxon date in this area could not be sourced by the author. It may well be that type 1b, 2a, 2b and 12 combs continued in use into the ninth and tenth centuries south of the Danelaw, and that an absence of diagnostically 'Viking Age' material culture in general is causing excavators to characterise sites as 'Mid-Saxon'. Alternatively, there may be a genuine absence of excavated ninth and tenth century sites

in this region, or the combmaking industry may already have been dominated by perishable materials such as horn and wood, at least two centuries before they became the fashion in the north. Whatever the reason, there seems to be something of a lacuna. Some workers clearly expect to see ninth century continuity of Mid-Saxon types in this region, as combs of types 7 and 8b at Winchester were worthy of mention as outliers, and were taken as suggestive of contact with the 'North Sea area' (Galloway 1990b: 666). Similarly, Ian Riddler was moved to suggest a well-made comb of type 8b from Canterbury must represent a Scandinavian import. However, for now the verdict must remain open on the popular comb fashions of ninth and tenth-century southern England.

In contrast, the towns of East Anglia provide a considerable quantity of comb material for consideration. Settlements at Thetford, Norwich, and Ipswich are of interest, and though the Ipswich material is not yet fully published, some information was available. Types present there include 5 and 6 (I. Riddler *pers comm.*). Much of the Norwich material comes from medieval levels, and consists of type 14b combs (*e.g.* Margeson 2002: fig. 8: 10,11). However, Thetford provides a much larger collection of combs dated to the Viking Age, including types 5 and 7, and a considerable quantity of type 4 riveted mounts (Rogerson and Dallas 1984; Riddler 2004).

The situation in the south-west is difficult to assess, given the acid soils of the region, with few combs known from Bristol and Exeter (see for example Watts and Rahtz 1985; Sivier 2002; Allan 1984). Type 11 combs are known from the Iron Age to medieval site of Dinas Powys (Alcock 1963), but they are not independently dated, with examples coming from layers containing a mixture of pottery dated to the fifth to seventh, and eleventh to twelfth centuries (Alcock 1963: 10). No other published collections of combs from the region are known to the present author, and little can be said about comb manufacture and use in the ninth to eleventh centuries. Ian Riddler (*pers comm.*) notes a type 8b fragment from Citizen Road, Bath, but Mawgan Porth, the key settlement site for the south-west during the Viking Age, produced only a single, undiagnostic comb fragment (Bruce-Mitford 1997: 85-86).

### 6.2.3 Ireland

It was stated above that our knowledge of combs from England's Irish Sea coast is minimal, but the situation in Ireland itself is rather more satisfactory. The large corpus from Dublin awaits publication, but a number of combs held by the Royal Irish Academy have been catalogued by Wilde (1861), and the Irish corpus as a whole has been helpfully synthesised by Dunlevy (1969, 1988). These combs include representatives of types 1b, 1c, 10, and 11, as well as 5, 6, 7, 8a, 8b, 8c, 13, and 14b. As discussed above, the status of type 12 is rather ambiguous, but it certainly does not seem to have been important in pre-Viking or Viking Age Ireland. Interestingly, type 9 also seems to be poorly represented; none of Dunlevy's descriptions or illustrations fit the type, while Ian Riddler (pers comm.) has noted that the vast majority of combs in the Irish collections have iron or bone rivets.

Being the most numerous settlement type in Early Christian Ireland most people (high and low status alike) probably lived in ringforts (Stout 1997). However, such sites are poorly studied, and crannogs present the best source for early medieval combs. Like the ringforts, most Irish crannogs seem to date to the seventh century AD and later (see Baillie 1985 and Lynn 1983; cf Crone 2000; Campbell 2001: 287). Type 1b, 1c, and 11 fragments are known from these sites; see for example the combs from Ardakillin (Dunlevy 1988: 376, 384, 386, 393), Ballinderry (Hencken 1936, 1942) and Lough Gara (Dunlevy 1988: 382, 389; Fredengren 2002: fig. 63).

In contrast, type 12 combs appear to be unknown (see above). At the site of the royal crannog at Lagore, preservation was very good, and a relatively large number of combs survive, including examples of types 1b and 1c, while type 11 is particularly well represented. There is also one possible example of a type 13 comb with double connecting plates. There are, however, only a few (Dunlevy lists nine) examples of types 5-8 at Lagore (Hencken 1950; Edwards 1990: 84-85, fig. 37).

From Ireland as a whole, Dunlevy lists fifteen examples of type 5, from sites such as the High Street, Dublin, and the crannogs at Lagore and Strokestown. Few of these combs come from dateable contexts, but one from the High Street was found in a tenth-century level (Dunlevy 1988: 363). One might note the absence of references to combs in accounts of the cemeteries at Islandbridge and Kilmainham (O'Brien 1998), and in Harrison's (2001) discussion of Irish furnished burials, though this might relate to antiquarian methods of collection and curation. Nonetheless, combs are rare finds in

Ireland's Viking Age graves, though there are exceptions at Larne and Finglas (S. Harrison *pers comm.*).

Ireland's largest collection of combs from the Viking Age onwards comes from Dublin (there are several thousand combs and fragments, including over 600 from the High Street and Christ Church Place excavations alone), but this corpus is as yet unpublished (Ian Riddler *pers comm.*). A few examples of the double-sided types 11 and 13 (Class D3) are known (Dunlevy 1988: 392), but single-sided types 5-8 dominate. Using Dunlevy's data, the majority of combs belong to Class F2 (which includes types 6 and 7 in the present terminology, of which there are twenty examples) and F3 (herein types 8a and 8b, fifteen secure examples). Dunlevy describes a number of find contexts for these combs, with dates ranging between the early-tenth and early-twelfth centuries (Dunlevy 1988: 364-5). More recently, a type 6 comb was found in level 2 at Site I, Winetavern Street; a level dated to the twelfth century on ceramic evidence (Hayden and Walsh 1997: fig. 68, no. 2). If the Scandinavian chronology applies, this comb must be residual. At Dublin Castle, a number of type 8a/b combs were found in the same eleventh to twelfth-century levels as three examples of 'short F2 combs' (herein type 6) (Dunlevy 1988: 366). Types 8a and 8b have also been found in levels broadly dated to the early-tenth to twelfth centuries at Winetavern Street and High Street, while outside of Dublin they are known from a number of sites including Ballinderry crannog (Hencken 1936: fig. 31) and Knowth (Edwards 1990: fig. 37).

Dunlevy suggests that this, together with their uniformity of style and material use, indicates that Class F3 (*i.e.* types 8a and 8b) combs were mass-produced in Dublin, for use in the town and export around Ireland and northern Europe. However, her corpus shows that types 8a and 8b are also well-represented beyond the capital, listing eleven examples from Knowth, for example (dated to around AD 1000; see Eogan 1974; Edwards 1990: 85). Moreover, of fifty-nine examples of Dunlevy's Class G (which corresponds to type 8c herein) only thirteen have secure Dublin provenances, while eleven come from Knowth, and there are thirteen (insecurely) sourced to Strokestown. Dunlevy states that Class G (type 8c) combs come from late eleventh to thirteenth century deposits at High Street, but from the early-tenth century at Winetavern Street. More recently, a probable example of type 8c was found in a late twelfth-century deposit in layer 1, Site J, Winetavern Street (Hayden and Walsh 1997: fig. 68, no.3). An extended currency for

these types seems possible, especially given the apparent scarcity of types 9 and 13 in Ireland; Dunlevy makes no clear reference to type 9 combs, and only fifteen occurrences of type 13 are noted.

Well-dated Viking Age combs from elsewhere in Ireland are somewhat scarce, and Dunlevy (1988: 364) has noted the rarity of class F2 short (herein type 6) combs outside of Dublin. One might expect the early medieval towns of Munster to provide some useful material. However, results from Limerick are yet to be published, while the earliest excavated layers at Cork are the twelfth to thirteenth-century deposits at South Main Street. Neither have early Viking Age deposits been identified at Waterford, but late eleventh to thirteenth century levels yielded eighty-one combs. These combs showed a remarkable homogeneity, with fifty-two combs fitting well into type 8c, and another twenty sharing some characteristics with both this type and type 7. There were also four double-sided type 13 combs, including some with straight and biconvex endplates (Hurley and Scully 1997: Fig. 17:1 no.15, Fig. 17:2, no. 21).

#### **6.2.4 Scandinavia and Northern Europe**

On the continent, excavations in the harbour at the seventh to ninth-century site of Dorestad (van Es and Verwers 1980; 1980) uncovered little evidence of boneworking, and few combs, but much material has been recovered from the Frisian terpen (Roes 1963). Here, most combs date from between the third and ninth centuries, though there are a few examples that have been dated to the thirteenth and fourteenth (see below). Early material includes a series of elaborate triangular-backed comb forms (type 1a), as well as barred zoomorphic (type 1b), and double-sided (type 10) combs. These types are accompanied by hogback (type 2b) forms, and type 5 combs that are often of very great size, and have much in common with the early material from Birka (see below). Also present are handled and asymmetric combs (type 3) and elaborate comb cases (probably for use with combs of type 1a), while later medieval material is represented by just three type 13 combs. Unfortunately, Roes (1963) provides little discussion of stratigraphy, so chronology is not accessible.

At Ribe, whose foundation is historically attested as occurring in the early eighth century, few completed combs were recovered from excavations in the 1970s, despite a considerable quantity of evidence for manufacture (Ambrosiani 1981: 94; Jensen 1991;

Feveile 1992; Feveile and Jensen 2000), and the more recent excavations at the 'Post Office' site are as yet unpublished. From the earlier interventions, only thirteen fragments of completed combs were recovered, of which few are identifiable. One is clearly a type 5, and Ambrosiani (1981: 131) thinks the ornament indicative of the Vendel period; it is notable that it comes from a pit dendrochronologically dated to AD 710 (Ambrosiani 1981: 153). Ambrosiani points out that the form of the connecting plate blanks cannot be reconciled with her A-combs, and they are more likely to represent pre-Viking forms. Notably, type 8a and 8b are absent from the Post Office site, and though there is an example of the latter form from another site in the town, the context is insecure, and is probably of medieval date (S. Qvistgaard pers comm.). However, there are two (presumably intrusive) examples of type 13, one with straight endplates, the other with complex, profiled ends, and two rows of close-set rivets, while a type 14b one-piece double-sided comb carved in elephant ivory was recovered from a 'recent' layer.

There is a corpus of around 2000 combs from the important late-eighth to mid-eleventh-century settlement of Haithabu, but stratigraphic resolution at the site is poor (see Ulbricht 1978: 140; Clarke and Ambrosiani 1991: 59). Types 3, 5, 6, 7, and 14b are known, as well as a few examples of forms 8a and 8b (see Tempel 1969: Tafel 38, no. 6). The large type 5 combs found in the earliest levels were thought to be imports, as no semi-manufactures of such form were identified. Interestingly, waste is absent in the first phases, but many combs from Tempel's *Formengruppen* 4-6 (herein type 6) were made onsite, and Ulbricht thus dates the start of production to the tenth century (Ulbricht 1978: 140). The number of type 7 combs from the site is also interesting; Tempel lists twenty-two examples of his *Formengruppe* 9 (herein type 7) from across Europe, fourteen of which were from Haithabu, with one other also from Denmark. Combs that approximate to type 8a are known from tenth-century deposits at Haithabu, and form part of Tempel's *Formengruppe* 7, but type 8b is known only in small numbers, and is assigned a broad tenth to eleventh-century date. Copper alloy rivets were not one of Tempel's key criteria in *Formengruppe* definition, but combs herein termed type 9 do not seem to be common in the Haithabu corpus.

As one might expect, the comb forms from Schleswig (Haithabu's eleventh-century successor) include most of Wiberg's (1977) type 9 and 13 variants, but type 6 is poorly represented. Type 14a combs are found throughout the eleventh to fourteenth-century levels, while type 9 is most common in eleventh and twelfth-century layers, becoming rare

in the thirteenth century, and absent in the fourteenth. The first occurrence of a type 13 comb is as early as the eleventh century, but they do not become numerically important until the twelfth and thirteenth centuries (Ulbricht 1984: 52).

Despite some large scale interventions (see for example Skre and Stylegar 2004; Munch *et al.* 2003), little is known of combs from Viking Age sites in western Scandinavia. Though poor preservation renders quantification impossible, at Kaupang it is possible to discern the characteristic cross sections and decorative schemes of comb types 5 and 6 (Skre and Stylegar 2004: 47, fig. 50 **fig. 6.10**). A number of antiquarian acquisitions and spot finds from the Trøndelag region are held by Trondheim Vitenskapsmuseet, and though a thorough survey was not possible, it became clear that type 5 combs were only important outside the city of Trondheim (**fig. 6.11**). None are known from *Folkebibliotektomten* (the Library site), and the author's personal survey failed to identify examples from elsewhere in the city (**table 6.8**).

Much of the material from beyond the town is without good provenance, but one might note the presence of a type 5 comb in the ship grave at Oseberg (dated to c. AD 820, Bonde and Christensen 1993). At Tuna, a range of comb types is preserved in graves, including 1a, 5, and 6 (Arne 1934), but there are no comb remains from Gokstad (Nicolaysen 1882). Well-provenanced combs are thus limited in numbers, and an overall impression of the range of combs in circulation in early Viking Age Norway remains elusive.

Late Viking Age and medieval material is better known. Excavations close to the waterfront at Oslo recovered combs dating from the eleventh century onwards (based on stratigraphy, but confirmed through a series of twelve radiocarbon dates; Schia 1987b). A small number of type 6, 9, 13 and 14a combs come from the sites of Oslogate 3 and 7 (Wiberg 1979), but the Søndre Felt site provides greater numbers and higher resolution (Wiberg 1987). Here, Wiberg tracks the frequency of comb forms through a sequence of fourteen 'fire levels', and it is notable that single-sided forms (type 9) outnumber double-sided (type 13) ones by 2:1, dominating heavily until fire level 11 (dated broadly to the eleventh- mid-twelfth centuries), at which point double-sided combs gain in currency, ultimately replacing single-sided types in fire level 7 (thirteenth to mid-fourteenth

century). The earliest type 9 forms to appear at Søndre Felt were examples of forms E1-E5, and they occurred alongside those classified herein as type 6.

A large number of combs are known from late tenth to fourteenth-century deposits in Trondheim, with the majority coming from extensive excavations at the Library site. The corpus from this site has been well-studied by Flodin (1989). Flodin's analysis was undertaken with reference to the Oslo sequence earlier established by Wiberg (1977, 1979, 1987), as outlined above. However, in order to further elucidate this collection, and the western Scandinavian corpus in general, a small random sample of forty combs from Trondheim and the surrounding Trøndelag region was recorded in detail by the author, and further data were collected from the unpublished archive held at the NTNU's *Vitenskapsmuseet* (Trondheim), and from notes taken by Pat Galloway.

The range of types recorded from Trondheim and the surrounding Trøndelag region is relatively limited, although the variation *within* types is considerable. Combs of typical Viking Age form (types 5 and 6) are important as spot finds from graves and other contexts outside the city. In Trondheim itself, the types represented are 6, 9, 13, 14a and 14b. Flodin's analysis, together with the revised chronology presented by Christophersen and Nordeide (1994), allows some detailed investigation of the sequential development of types 9 and 13. In detail, variants E1, E2 and E5 dominate the early part of the sequence, accompanied by smaller numbers of types E3 and E4, E4 only really becoming important from the twelfth century. Around this time form E6 becomes important, and this is the only single-sided type that remains in consistent use in parallel with the double-sided forms that dominate the later phases of the Trondheim assemblage. Of the double-sided forms, the straight-ended type D2 is the first to appear, in phase 6 (mid-twelfth century). This is followed by D1, D5 and D7 (characterised by biconvex, unmatching, and offset endplates respectively) in the late 1100s, and D3 and D4 (concave- and convex-ended) in the mid-thirteenth century.

It is likely that the majority of Trondheim's combs were manufactured in the town itself (see below), but near-identical forms are common across the Norse-influenced world between the late tenth and fourteenth centuries, with centres of manufacture at Oslo, Bergen, Lund, Sigtuna, Schleswig, and Novgorod. Combs are important in all levels from the tenth to fourteenth centuries at Trondheim, and Flodin's sequence, when studied in association with Trondheim's revised chronology (Christophersen and Nordeide 1994: fig.

24) allows some understanding of sequential development and inter-relationships.

Figures 6.12 and 6.13 illustrate the situation more clearly. It should be noted that poor preservation potential in the uppermost layers of the Library site renders quantitative data unreliable from the mid-fourteenth century onward.

It can be seen that a range of type 9 subforms are present. Long combs with connecting plates of bowed or plano-convex profile (Flodin's types E1 and E2) appear to have been current between phase 2 (late tenth to early eleventh century) and phase 9 (late thirteenth to early fourteenth century), though they are much more common in the early part of this range, such that some later examples may be residual. The range of Flodin's types E3 and E4 suggests that short, straight type 9 combs came into being in phase 4, which dates to the second half of the eleventh century), surviving until phase 8 (mid-thirteenth century). Like E1 and E2, the ornately carved combs of class E5 remain in use between phases 2 and 9, though occasional (presumably residual) examples are present in phase 12 (post-sixteenth century) and surface contexts.

Double-sided combs are less numerous at Trondheim, though this is understandable given their shorter period of currency and the overall chronology of the Library site. Type 14a one-piece double-sided combs are present in relatively early phases at Trondheim (some even in the eleventh century), but are rare (Long 1975: 21). Double-sided examples that are demonstrably composite in construction (*i.e.* type 13) first appear in phase 6 (mid-twelfth century), and they become most important in the thirteenth century. Type 13 combs with straight endplates (Flodin type D2) first appear in phase 6, and survive into phase 9 (fourteenth century), but those with concave and convex ends (Flodin types D3 and D4 respectively) do not appear until phase 8 (early thirteenth to early fourteenth century). Those with biconvex ('fishtail') and offset endplates (Flodin types D1 and D7 respectively) are not present until phase 7 (late twelfth to early thirteenth century), becoming more important into phase 8 (mid-thirteenth century) (see table 6.9 for summary).

Overall, one can see a period of transition from type 9 to type 13 around the end of the twelfth century, though there is certainly no clear-cut change. Correspondence analysis was utilised to clarify the relationships between the groups and their subtypes. Using the data available from the printed excavation archive held at Trondheim *Vitenskapsmuseet*, the

combs may be divided into two groups, relating to single- and double-sided types, but distinguished by more than just the number of sides (**fig. 6.14, table 6.10**). Unfortunately, given the limited range of variables that was recorded in the archive, this pattern is difficult to interpret, and a study based on a greater array of variables would be useful. Nonetheless, the single-sided forms can be divided into at least three subgroups. One of these consists of long combs with plano-piriform sections, copper-alloy plating, and/or basic riveting (left hand side of plot). Another consists of smaller combs with high, arched backs which have rivets that run around the circumference of that arch, and are often arranged to form motifs (right hand side of plot). A third, rather heterogeneous group, consists largely of relatively short combs with straight backs, which employ a range of decorative riveting techniques (clustered around the origin). Thus, correspondence analysis replicates Wiberg's typology in broad terms, though it does not discriminate between straight-backed forms. The first and second groups correspond to variants of her type E5, but types E1, E2, E3, E4 and E6 are all grouped together. Moreover, there is no patterning evident within type 13, though no doubt this relates to the small sample size. In order to explore the feasibility of further divisions, it is preferable to consider type 9 (single-sided) and type 13 (double-sided) forms independently.

Unfortunately, the sample of nine type 13 combs recorded by the author is too small to be informative, but analysis of the sample of twenty-two single-sided combs (types 6 and 9) produced a number of clusters (**fig. 6.15; table 6.11**). They help to separate out the central cluster in **fig. 6.14** above. Short, simple combs with basic riveting sit in 'group 1' at the top left of the graph (these are type 6 combs, and fit into Wiberg's type E3). Combs in 'group 2' to the lower left have long straight profiles, and relate most closely to type E1. Those in 'group 3' around the origin may be characterised by features such as ring-and-dot ornament and ornately carved endplates, and thus represent Wiberg's type E5. 'Group 4' sits to the right, and contains combs with suspension holes and multiple rows of rivets, thus fitting well into Wiberg's type E6. This group shares characteristics (see above, plus convex endplates) with type 13 combs, and may be dated to sometime around the thirteenth century. Thus, one might suggest that there is a chronological dimension to the plot; those to the left of the origin are the earliest forms (including type 6), those around the origin are long-lived, and those to the right are the latest, a pattern supported by Flodin's sequence.

The groups produced by correspondence analysis do not relate directly to the typology outlined and used by Wiberg and Flodin (other than type E6). One should not expect correspondence analyses to directly replicate more traditional typologies, as the former are based on the associations of a large number of variables, while the latter are dependent upon a limited number of attributes selected for their perceived potential. In the present case, the differences are partly due to the importance of variations in the detail of decorative riveting in the CA. These variables were not considered in detail by Wiberg or Flodin. Despite these discrepancies, the Wiberg/ Flodin typology has been retained in this study to facilitate 'backwards comparability'.

Other settlements in Norway are difficult to comment upon. To date, little has been published on the combs from excavations in Tønsberg. There is a large corpus from the eleventh-century foundation of Bergen,<sup>3</sup> and it appears that types 9 and 13 were dominant here. Gitte Hansen (2005) has recently published the material from Bergen's eleventh and twelfth-century contexts, so a little more may be said about this phase of the town. There is only a single comb (type 9 E5-3) from horizon 4 (dated c.AD 1100-1120s), but combs are much more common in horizon 5 (1120s to 1170). There is a single possible example of type 6 (a fragment of Flodin type E3), but type 9 combs dominate. There are twelve examples of type E1, eight examples of type E3b, thirteen examples of type E4, three examples of type E5-1, and three examples of type E5-2. However, by far the most common form is type E5-3, with twenty-three horizon 5 examples, in addition to the fragment from horizon 4. There is also a single fragment of type E5-5, six occurrences of type E6, and five unknown single-sided composite types. In contrast, double-sided forms are scarce, with only three examples of Flodin type D2 and a single unknown fragment. These patterns are informative. While types E4 and E5 were equally dominant at Trondheim, the absence of type E2 at Bergen is not paralleled at the Library site, and may relate to Bergen's relatively late foundation. Similarly, the rarity of type E6 must have chronological significance; it surely represents a late fashion (it is notably the latest single-sided form to appear at Trondheim, not becoming common until phase 6 (mid-twelfth century). The absence of all double-sided composite forms other than D2 supports the indication from Trondheim that D2 was the earliest type 13 form, appearing at both Bergen and Trondheim in the mid-twelfth century.

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<sup>3</sup> Thanks to Gitte Hansen and Patricia Galloway for providing unpublished data from Bergen.

In sum, though early material is rare and difficult to interpret, the late Viking Age and medieval pattern in Norway is relatively well understood. Turning to eastern Scandinavia, the most important collection is that from the island of Björkö, including Birka's Black Earth deposits and the surrounding gravefields. This corpus has previously been subjected to a detailed study (Ambrosiani 1981), in which the majority of combs were classified as type 'A' (type 5 in the present study) or 'B' (type 6 herein) on the basis of broad decorative styles and the cross-section of the connecting plates. These could then be further classified as subtypes A1, A2, A3, B1:1, B1:2, B1:3, B2, B3, and B4, based on ornamental variations (fig. 6.16).

Ambrosiani's primary dating was based on the Björkö grave finds, using associated finds that were datable on typological grounds, and paying particular attention to the co-occurrence of dissimilar comb forms in a given grave. She found that A2 combs (type 5 combs with ring-and-dot ornament) were the oldest form, stretching back into the eighth century and persisting until the early tenth. These were overlapped by A1 (characterised by vertical line decoration), which were current between the early ninth and mid-tenth century, and A3 (with interlace ornament), which were shorter-lived, spanning the period between the second-half of the ninth century and the first half of the tenth. Broad support comes from combs excavated from the harbour area (fig. 6.17a; Ambrosiani and Clarke 1992). Thus, A-combs as a whole can be said to date between the late-eighth and mid-tenth centuries. Regarding the typology applied in the present work, it should be recalled that earlier combs with similar cross-sections also fit into type 5. These combs differ from Ambrosiani A combs in terms of overall profile and means of decoration (fig. 6.18), though they are clearly related to the former; Tempel (1969) refers to them as *Vorformen*. They date back into the eighth century, when they are known from sites in Frisia (*e.g.* Roes 1963) as well as southern Scandinavia.

A1 and A3 were partially contemporary with B combs (herein type 6), as the oldest of these (B1), first appeared around AD 900, with B2-B4 following in the first half of the tenth century. B-combs persist until the cessation of accompanied burial on Björkö, so Ambrosiani cannot determine the duration of their currency, but it is safe to say that they remained extant at least until the second half of the tenth century. In order to corroborate her findings, Ambrosiani also analysed comb waste from Birka itself, and carried out a survey of published combs from the relevant levels at Staraja Ladoga,

Wollin, Haithabu, Elisenhof, and Dorestad (fig. 6.19). This upheld the extinction of A-combs (type 5 in the present study) by c. AD 950, and demonstrated the absence of B-combs (type 6 herein) anywhere prior to the late-ninth century. However, Ambrosiani's survey was less conclusive concerning the date at which type B fell out of use, stating only that similar combs were known from the lower levels of Bergen, Oslo, Sigtuna and Lund. Unfortunately, at these sites their chronology is difficult to assess, as they have been classified together with later (type 9) forms (see above). A comprehensive reanalysis of combs from Scandinavian towns is necessary in order to address the question of the latest date for type 6 combs.

In general, Ambrosiani's analysis is well executed, and seems secure, but it is appropriate to revisit the Björko material in order to ascertain how it relates to, and compares with, the material from the British Isles. Time did not permit a comprehensive recording of the combs from the island, but a sample of 216 combs from Arbman and Stolpe's excavations in the Black Earth settlement deposits, cremation and inhumation graves, and from recent excavations by Bjorn Ambrosiani, was recorded. A cursory examination of the remainder of the corpus confirmed the legitimacy of the sample as representative of the whole.

Table 6.12 shows the broad distribution of comb forms at Birka and its related graveyards, based on this survey. The most remarkable feature is the apparent homogeneity; the vast majority of combs can be classified as types 5 or 6, while in contrast to the Danelaw, types 4, 7, 8a, 8b, and 8c are absent. This is somewhat surprising, given the ostensibly cosmopolitan nature of Birka as a settlement and marketplace. However, within these types, subforms alien to the British Isles were recorded. These included 'boat-shaped' type 5 variants, similar to those from the Frisian terpen, and labelled as pre-Viking *Vorformen* by Tempel (1969; fig. 6.20a this thesis), and a type 3 'asymmetric comb' (see fig. 6.20b), but perhaps of most interest is an isolated example of a type 11 comb (fig. 6.21; see above, and chapter 8 for a fuller discussion of the type and its traditional provenance). It seems possible that the comb was brought to Birka by raiders, merchants or other travellers from the Irish Sea region.

The town of Sigtuna, near Stockholm, is generally accepted as Birka's successor (see Ros 1992; Broberg and Hasselmo 1981; Roslund 1992; Tesch 1987; Tesch and Vincent 2003). Sigtuna has its origins sometime in the 900s, but was particularly important between the early-eleventh and mid-thirteenth centuries. Little has been published on the combs from

Sigtuna, and although full recording was not possible, a cursory observation of a selection of the comb material was carried out. A large quantity of combs is known from Storagatan, the main street of the town, together with waste deposits of considerable size. Comb types present include 6, 9, 13, and 14(a-c). Like other classes of artefact, those from the earliest levels share characteristics with the later ones from Birka (see Clarke and Ambrosiani 1991: 79).

Further south, settlement at Lund is archaeologically attested from the late-tenth century (Clarke and Ambrosiani 1991: 64) and, though the most comprehensive work on the comb material (Christoffersen 1980a, 1980b) focuses on the industry itself, rather than the combs produced, some typological data is available from earlier studies. As might be expected, combs recovered from excavations in the town include types 6, 9, 13 and 14 (see Mårtensson and Wahlöö 1970: plates 82-84 ; Persson 1976; Smirnova 2005: 91, 296).

The fort of Eketorp, Öland, off Sweden's Baltic coast, has Roman Iron Age (c. AD 300-400), pre-Viking (c. AD 400-700), and Viking Age/medieval (c. 1000-1300) phases (Borg *et al.* 1976: 10), but most of the combs come from its final phase, which unfortunately lacks stratigraphy. Nonetheless, as one might expect, they belong primarily to types 9, 13, and 14a, though examples of 8a are also represented. Type 9 combs include Wiberg's type E3 (equivalents of type 8c), E4 (straight combs), and E5 (those with plano-piriform connecting plates). However, the most striking feature is the dominance of type 13 combs (131 finds). Forms include relatively rudimentary combs with widely-spaced copper alloy rivets and concave endplates, and a large quantity of finer combs with close-set copper-alloy rivets and biconvex (fishtail) endplates, while straight-ended type 13 combs (Flodin type D2) are relatively rare. Unfortunately, as the Eketorp combs are poorly stratified, they cannot be used to refine typological dating, and though it is claimed that type 13 combs were in circulation here as early as the twelfth century (Borg 1998: 356), there seems little stratigraphic basis for this assertion.

It is appropriate to consider the nature of combs and comb making evidence from yet further east. Mobility during the late Viking Age and Middle Ages was remarkable, particularly amongst the aristocracy (see Smiley 2000), and the possibility of the transport or trade of combs, and transmission of fashions between geographically disparate areas cannot be discounted. Thus, in the following discussion, combs from the Baltic region and eastern Europe will be considered.

Gotland is worthy of mention, given the economic importance of Visby and the Viking Age harbours of Paviken and Fröjel, as well as the island's richly furnished graves. A large number of combs are known from the island (Lundström 1974; Carlsson 2002). Types identifiable include 5, 6, 9, 13 and 14a, while two one-piece combs made entirely of bronze are also of note. Regarding the combs of the eastern Baltic, little has been published in languages accessible to the author, though studies of Estonian combs are an exception (Luik 1998, 1999, 2001, 2005). Three type 5 combs are known from hillforts and settlements in Estonia, while there are nine (mostly fragmentary) examples of type 6 (Luik 1999: 101-103), but good contextual information is not available. Most combs come from excavations in the medieval towns, and 80% of combs fit into classes 9, 13, and 14a. The small quantity of combs (approximately fifty) from all periods in Estonia is probably related to the lack of major interventions carried out, and it is notable that recent excavations in Tallinn and Tartu have swelled numbers considerably (Luik 1999).

Little information on Viking Age or medieval combs from Poland, Lithuania, or Latvia has been published in Germanic languages, but some information is available. Combs from the tenth and eleventh centuries of Poland include types 6, 7 and 8a/b (see Cnotliwy 1956). Moving yet further east, the combs from Staraja Ladoga - which was occupied between the mid-eighth and mid-tenth centuries - have been well studied (see Davidan 1962, 1977; Hilczeronna 1966; Smirnova 2005), and considerable numbers of types 5 and 6 are known, together with type 14a. Also of note are one-piece copies of type 6 combs, carved in elk antler, similar to examples known from Birka.

Combs present at the nearby fort of Ruric Gorodische (founded in or before the ninth century) include types 5 and 6, and variants of types 13 and 14a (Smirnova 2005: 87, 178, 296), while at Novgorod (founded in the late-ninth century, and occupied throughout the Middle Ages), a variety of types are identifiable. The most common forms are 5, 6, 9, 13 and 14a, though there are rare examples of types 7 (only eight examples from a total of 371 combs), and 8b (1/371). The tenth century date for Novgorod's foundation is reflected in the coincidence of types 5 and 6 in its earliest phases. Following a short period (tenth to eleventh centuries) in which type 6 and type 9 combs are popular, single-sided combs dwindle in numbers, replaced by type 14a, and then type 13, double-sided varieties. Type 13 combs first appear in the twelfth century as a minor component of the

corpus, and only surpass type 14a in the mid-thirteenth century. A variety of forms are discernible, with all of the standard endplate forms present.

### 6.3 Summary

Having surveyed a wide selection of evidence, it is possible to summarise the chronological and geographical associations of each of the main comb types. This background will then provide a basis of comparison for the material from north-east England and Atlantic Scotland studied in detail in chapters 7 and 8. **Figure 6.22** outlines the chronological ranges of the most important comb types in a number of regions across the British Isles and Europe. **Figure 6.23** simplifies the situation across Europe as a whole, and summarises it in schematic form. **Figures 6.24-6.26** take similarly generalising snapshots of the geography of comb production and use. These figures are based on the above discussion, but the patterns will be discussed in more detail below.

Type 1a is rather a broad group, and encompasses comb types current between the late fourth and fifth centuries, though some variants may still have been in use into the 700s (MacGregor 1985: 83-85). They are found in Roman, Saxon, and Merovingian contexts. As they are not the focus of the thesis, a fine typology or chronology is not constructed, and readers are directed to the work of Thomas (1960).

Type 1b combs are most common in the period between the fifth and eighth centuries, and are generally limited to Frisia and areas of Saxon settlement. Their relationship to type 1c will be further studied in chapter 8. The date of origin of type 1c itself seems rather unclear; MacGregor suggests that the group may date back as early as the fifth century, and that they survived until the eighth (MacGregor 1985: 88). However, given the lack of stratified finds, we cannot be certain that their use had ceased by AD 800. There are three fragments of type 1c combs in phase V at Buckquoy [Ritchie 1977: 194-196], while at the Brough of Birsay there were four examples from the Lower Norse Horizon and only three in the Pictish (Curle 1982: 22). The type has been described by Curle (1982) and MacGregor (1985: 87-88) as 'Celtic'. While it is preferable to avoid such a label, they do seem to be restricted to northern and western Scotland, and Irish contexts, though Smith (2000, 2003) has argued that they derive from 'Frisian' barred zoomorphic combs (type 1b).

Type 2 combs all have their main period of currency prior to the tenth century. Types 2a and 2b are common within England and Frisia during the seventh and eighth centuries, though variants do extend into the ninth, while certain characteristics of type 2b are evident on combs of earlier (perhaps sixth century) date (see for example Dickinson 1992; cf MacGregor 1992b).

Type 3 handled and asymmetric combs are known primarily from Saxon and Frisian contexts. A form of handled combs is known from cemeteries in Merovingian Frankia (see Hodges 1980; fig. 6.27), but the type encountered in England is morphologically and chronologically discrete. Riddler (1990) has questioned the supposed Frisian associations of these handled combs, and, on convincing numerical grounds, has suggested that they are a Saxon form. Nonetheless, the frequent occurrence of the 'display side convention' (see Glossary) is rare on other Anglo-Saxon forms, leaving some room for doubt (see MacGregor *et al.* 1999: 1938).

However, no evidence of the asymmetric form was identified in England (see Chapter 7), and its distribution does seem to be concentrated in the Frisian area of northern Europe, with outliers in Scandinavia and Germany (see Hodges 1980; Riddler 1990). Few well stratified finds of either form are known, but Riddler suggests an 'origin' prior to AD 700, relating to the Merovingian combs mentioned above, though the main period of currency for both handled and asymmetric types was surely between the eighth and eleventh centuries (Riddler 1998: 189).

Type 4 riveted mounts have a curious distribution, apparently restricted to England and Ireland. At Thetford, Norwich, York, and Lincoln, type 4 mounts are found in tenth to twelfth-century contexts, while at Winchester they are centred on this period, with outliers in ninth and thirteenth-century contexts (Biddle 1990a: table 82). They will be studied in more detail in Chapter 7.

Ambrosiani (1981) assigned her A combs a period of currency between the start of the ninth century and the middle of the tenth. This seems broadly applicable around Europe, with the type being the most common comb form in Viking Age pagan graves, but combs from Merovingian and Vendel Age Scandinavian contexts are essentially of the same type

(see Tempel 1969: 75-6; Sjöberg 2000: 16). Though Tempel divides large, early Viking Age forms into three *Formengruppen*, as well as a class of pre-Viking '*Vorformen*' (Tempel 1969: 75-91), he concedes that there is some overlap between groups, and they seem to represent a continuum of forms from a common tradition. For this reason, herein they are all classed as type 5 combs. Thus, the date range of type 5 may extend back into the eighth century, although clearly the floruit of the type was in the ninth. The type is a common find throughout Scandinavian Europe, including the British Isles, though examples from England are few.

Type 6 combs were clearly the successors of type 5, developing (Ambrosiani suggests in the southern Baltic area) in the earliest tenth century, and spreading ubiquitously across Scandinavian Europe. The type is occasionally found in Scottish pagan graves (*e.g.* Bay of Skail, Orkney), supporting an origin sometime pre c. AD 950. Ambrosiani does not explicitly date the end of type 6's currency, but suggests that it extends into the eleventh century. Similarly, the fact that a few examples are found at Trondheim and Sigtuna suggests that the type had not quite dropped out of circulation by the late tenth or early eleventh century, though it was no longer being produced in large numbers, and was in the process of being replaced by type 9.

In England (*e.g.* MacGregor *et al.* 1999), type 6 combs are frequently accompanied by type 7. At Coppergate in York, such combs are common in phases 4B-5B, suggesting a date between the early-tenth and mid-eleventh century. The type is also common in Ireland (Dunlevy 1988: 364-366), but is less well-known in Norway and Sweden. Nonetheless, there are good corpora from Haithabu (Tempel 1970; Ulbricht 1978) and Wollin (Cnotliwy 1970, Ryc 5a-c). In addition, small numbers are known from Lund (Persson 1976, fig. 288:2A, 289: 20D), Schleswig (Ulbricht 1984, Taf 28:5, 64: 1-3; 69), and a number of sites on the southern coast of the Baltic (Hilczzerovna 1961, Ryc 45:1, 480; Hensel 1958, Ryc 3b-c ; Hensel 1960, Ryc 112).

Type 8a and 8b occur in English, Irish, Scottish and Danish and Polish contexts dating from between the tenth and twelfth centuries (see Ambrosiani 1981:22-23). In Ireland in particular, they are very common, but fine chronology is unavailable. At Wolin they seem to occur in contexts dated to the late tenth and eleventh centuries (Wilde 1939; see also Ambrosiani 1981: fig. 3), and at Haithabu, Tempel dates type 8a to the tenth century, and

type 8b to the period between c. AD 900 and 1100 (though on the basis of parallels from other sites. The absence of both types from ninth-century levels at Ribe is notable. At Coppergate, York, most examples come from phases 4B to 5B (dated to the tenth and eleventh centuries). The available Irish chronology is less precise than this (Dunlevy 1988: 366-367), and publication of the collection from Dublin is eagerly anticipated (Riddler *forthcoming*).

Thus, one may propose two possible scenarios. It is possible that type 8a and 8b combs were developed and produced in Dublin in the tenth century, from where the objects and template spread to England, Atlantic Scotland, and the southern Baltic. Contact between these regions is otherwise attested; the *Skuldelev 2* warship sunk in Roskilde Fjord in the mid-eleventh century was built using Irish timber (Crumlin-Pedersen 2002: 66).

Alternatively, type 8a and 8b may originally have had their origin on the Baltic's south coast. They may thus have reached England via connections with Haithabu and other trading settlements, whereupon the template was readily transferred to Ireland, no doubt through close contacts between York and Dublin (see chapter 9). Here the type became very popular, was taken up as the comb of choice in the Western Isles, and even reached Orkney and Shetland.

It is difficult to choose between these two scenarios. The latter (Baltic origin) intuitively seems more likely, but the numbers of type 8a and 8b in both Denmark and England are relatively small. If this is the mechanism by which the template was dispersed, then for one reason or another the type was adopted with greater enthusiasm in the Irish Sea region than it was in either Scandinavia or England.

Types 8a and 8b seem to have dwindled in English, Scottish, and Irish contexts by AD 1200, though they may have had a longer life in certain isolated parts of the Western Isles (see Chapter 8). Type 8c combs are less frequently recorded, and seem restricted to sites of late eleventh to thirteenth-century date, including Waterford (Hurley and Scully 1997), Durham (Carver 1979), Prudhoe Castle (see Chapter 7), and Bornais (see Chapter 8).

Type 9 combs are particularly common in later Viking Age and medieval contexts in Scandinavia and its areas of influence (examples come from northern and western Scotland, Iceland, Estonia, and western Russia). They are present from the earliest phases

at Trondheim, but are not found in the pagan graves of Scandinavia or Scotland. It therefore seems safe to suggest a date of origin sometime between the mid-tenth and the eleventh century. Date ranges vary by subtype, and type 9 combs persist in small numbers throughout the Trondheim sequence, but most forms seem to dwindle before the fourteenth century.

Type 10 double-sided combs have a wide European distribution, and seem to have been common in the late Roman era. The same ornate form is found on some Early Saxon double-sided combs (*e.g.* West 1985), so these are included in type 10. Further classification is possible, but given the Mid-Saxon to medieval focus of this thesis, not necessary.

Type 11 combs are found in Irish and Scottish contexts, but given that few are known from good stratigraphic sequences, their chronological significance has never been properly ascertained. Type 12 combs are more widespread, with Saxon and Frisian representatives, as well as examples from Scotland, Wales, and Ireland. However, they are unknown in Scandinavia. In England, they are present at Early and Middle Saxon sites such as West Stow and Fishergate, York, and though they are present in ninth and tenth-century levels at Flixborough, they are lacking from tenth century phases at York and Lincoln. Thus, a date range between the late fifth/sixth and ninth centuries seems likely. A similar date range is probable in Scotland, given their presence at sites such as the Broch of Burrian, as well as Howe and Buckquoy, in Orkney, but this will be further addressed in chapter 8, together with the relationship between types 10, 11 and 12 combs.

Type 13 combs, like type 9, are common finds from medieval excavations in Scandinavia, northern Europe, and the Atlantic islands, and there are large collections at Trondheim, Bergen, Oslo, and Novgorod. That said, they are scarce in England and Ireland, though there are rare examples of similar forms with iron rivets from York (MacGregor 1995: 422-424 from 'post-1080 levels'). At Trondheim, the copper alloy-riveted form first appears in phase 6 (mid- twelfth century), and increases in frequency after that. Similarly, at Novgorod, they are first seen in the early 1100s, becoming important by the late twelfth and early-thirteenth centuries. Thus, in general terms the type has its origins in the twelfth century, persisting into the fourteenth, and perhaps the fifteenth centuries.

The large type 14a one piece combs of Scandinavia, central and eastern Europe seem to date from as early as the eleventh century, and are widely distributed at sites including Ribe, Haithabu, and Novgorod (see MacGregor 1985: 82; Smirnova 2005: 106). That said, they seem most popular after c. AD 1100, and at Novgorod they are used into the fifteenth century. Indeed, it is difficult to date the end of their currency, as horn combs of similar form are known from the seventeenth and eighteenth centuries.

Type 14b seems to be an exclusively later medieval and postmedieval type, originating no earlier than the fourteenth century, and extending as late as the seventeenth (see MacGregor 1985: 81-2). They are extremely well represented in English material, and are also known from Irish and Scottish contexts (see Dunlevy 1988), with fewer examples in Scandinavia.

Type 14c combs are rather poorly understood. The term 'liturgical comb' is often used, but this has been applied to combs as diverse in form as St Cuthbert's comb and the clearly secular Jedburgh example (Lasko 1956; Higgit 1987), and the group has not been the subject of any real scholarship since Lasko (1956). Moreover, the use of combs in the liturgy is less than assured; there are no references to any such ritual in Anglo-Saxon pontifical documents, and few direct statements in post-conquest England (S. Keefer pers comm.). Nonetheless, certain ivory combs do seem to have been something of a prestige item, circulating amongst the European ecclesiastical elite of the first and early second millennia, but their functions, places of manufacture, and means of exchange remain unclear.

Notwithstanding the above, it is unhelpful to classify combs solely on the basis of a perceived context of use, and given that the group has neither formal integrity nor demonstrable function, the term is best abandoned. Herein, large one-piece ivory combs (such as St Cuthbert's) fit into type 14a, while small, highly ornate derivatives of type 14b are classified as type 14c. The manufacture, distribution, and use of type 14c combs are in need of further study, but there is only a single example of the type in the present corpus, so this is not the appropriate venue for such an investigation.

In closing, it is germane to summarise the geographical variation in comb types. In southern Scandinavia (modern Denmark and northern Germany), type 11 and 12 combs

are unknown, and type 5 combs persist and develop from the eighth century until the mid-tenth. From c. AD 900, type 6 becomes important, while the occasional use of type 7 might relate to different purposes or owners. Both types 6 and 7 seem to disappear sometime in the 1000s, but type 8 combs are rare. The next important forms are types 9 and 13, which first appear in the eleventh century, though type 13 does not rise to prominence until the twelfth or thirteenth. Type 14a also seems broadly contemporary, being common from the eleventh century, and remaining popular into the fourteenth.

Further north, in eastern Scandinavia (Sweden and Gotland), and between the Baltics and western Russia, the situation is familiar, but with important differences. Type 5 is popular from the eighth century, but is overtaken in popularity by type 6 early in the tenth, ultimately replacing it. Type 7 and 8 were not manufactured here, and type 6 persisted unfettered until sometime around the start of the eleventh century, when it was replaced by type 9, in turn superseded by type 13. Type 14a again seems to have been present in late Viking Age and medieval phases.

In western Scandinavia (an area approximating to modern Norway), the situation is harder to judge, given the acidic soils. Nonetheless, it seems clear that type 5 was important from early on (there is a paucity of Vendel period sites, but these combs were certainly present from the late-eighth century), and persisted into the ninth. The few examples of types 7 and 8a-c suggest that they were not manufactured here, but type 6 was present until it was replaced by type 9 sometime in the eleventh century. These combs persisted until the start of the thirteenth century, at which point type 13 overtook them in popularity. Type 14a combs seem less common than in eastern Scandinavia, but where present seem to be broadly contemporary with those examples from Sweden and Denmark.

The situation in the British Isles will be discussed in detail in chapters 7 and 8, but herein some brief comment is appropriate. In England, types 1b, 2a, 2b, 3, and 12 are important from the start of our period of interest, with the first four forms persisting at least into the ninth century, and type 3 into the eleventh. Type 5 combs are rare, with isolated examples probably simply representing the possessions of migrants, but in the tenth and eleventh centuries types 6 and 7 became important, supplemented by type 4, 8a, 8b and 14a (rare), all of which seem to have persisted as late as the twelfth century. Types 9 and

13 are very rare, and type 8c is ultimately replaced by type 14b in the fourteenth century. Thus, we are left with something of a lacuna between the twelfth and fourteenth centuries. It is possible that combs in this period were manufactured using perishable materials such as wood and horn; indeed it is notable that of thirty-six combs from contexts in London dated to between AD1150 and 1450, thirty-two were of wood, together with one of ivory and one of horn (Egan and Pritchard 1991: 243). Although this is negative evidence, it does lend convincing support to MacGregor's model of a medieval decline in antler-working, and the chronology for the British Isles is lent a certain degree of harmony. However, this summary represents a rather 'broad brush' chronology, as there were undoubtedly regional variations within the British Isles. These will be the subject of some discussion in chapters 7 to 9.

In Ireland, the situation differs from that of England in that early phases are dominated by type 11, and accompanied by 1b and 1c, though type 12 appears to have been unknown. The appearance of type 5 combs is difficult to date, but the form must have been current in the ninth century, particularly as comb types 6 and 7 dominate in the tenth. Towards the end of this period type 8a and 8b combs become extremely important. It is unclear quite how late these combs persisted, perhaps into the thirteenth century, but in the Irish Sea region it does not seem that they were replaced on any scale by types 9 or 13 as was the case in northern Scotland (see below). Type 14b combs do not seem to have been dominant in Ireland (at least according to Dunlevy's survey), and few come from dated contexts, but based on the dates for known overseas parallels, and Irish examples in other materials, one might suggest that they began to be used from the *fourteenth or fifteenth century*.

In Scotland, types 1b, 2a, and 2b are absent, but 1c is very important. Types 11 and 12 are also common, though the distribution of the former is rather patchy, perhaps suggesting an origin in Ireland, while type 12 has a distinctly northern focus. Precise dates are difficult to ascertain, but the forms may well all be contemporaneous, dating to between the seventh and ninth centuries. Types 3 and 4 are absent, but type 5 becomes noticeable from sometime in the ninth century, particularly in the north, but also in the Hebrides. Types 6 and 7 never appear in any numbers, though types 8a-c are important between the tenth and thirteenth centuries, particularly in the west. From the eleventh century, type 9 combs became important in the north, dominating for two centuries

before their replacement by type 13. Type 14a and 14b combs are poorly represented, the latter probably not becoming important until the end of the medieval period.

It is difficult to be certain how many of these comb types were actually made within the regions of interest, and how many simply represent displaced objects, and a fuller analysis is needed to elucidate this issue (chapters 7 and 8). Nonetheless, a broad, pan-European comb chronology has been constructed, providing a backdrop for more detailed analyses of English and Scottish material. In addition to the use of the typology outlined above, these studies will consider the occurrence and co-occurrence of individual traits, in order to investigate variation on a range of scales. The sites discussed in this chapter will be revisited, and particular reference will be made to raw material exploitation and methods of manufacture employed at different localities.

# Chapter 7: Combs and Combmaking in northern England

## 7.1 Introduction

In this chapter, the results of the first of two broad-based case studies will be outlined. This is an analysis of combs from northern England, based on a study of material from sites in Yorkshire, Lincolnshire and Durham. This region makes a useful case study for several reasons. First, it includes a large number (and diverse array) of sites, covering the pre-Viking period, Viking Age, and Middle Ages. As such, some understanding of the dynamics of comb manufacture and use might be attained. Secondly, the area incorporates the important and well-excavated Viking Age settlements at York and Lincoln, and it is arguably at these large settlements where one might expect to find the clearest evidence for culture contact and the expression of identity. Comparison of the two settlements may be informative as to regional variation within the study area. Thirdly, the study takes in a number of recently excavated small settlements, thus facilitating through comparison an understanding of 'towns' and their hinterlands. Finally, it may allow the identification of differences between more or less discrete political units; the Viking Kingdom of York held power between much of the area between the rivers Humber and Tees, while 'Anglo-Saxon' secular and religious magnates oversaw Northumbria from Bamburgh and Durham. Thus, the area covered is broad enough that its material culture might be taken to articulate some of the differing political geography of this period. The recognition of synchronic and diachronic stylistic variation within this region should, when studied in relation to wider archaeological, historical, linguistic and other evidence, facilitate understanding of culture contact and the communication of identity, and how such phenomena varied over time and space (Chapter 9).

Moreover, these analyses will provide useful comparanda for the analysis of combs from Scotland (Chapter 8), and will inform a detailed discussion in Chapter 9. Results are arranged according to the following categories: the sites, typology and seriation, ornamental traits, raw materials, method and quality of manufacture, use wear and repair. Each of these areas informs the others, but the sections are arranged so as to

allow as logical a reading as possible. Within each section, variation by type, absolute chronology and space will be considered. In concluding, the chapter will summarise the findings of this case study, and consider how they may inform one's understanding of identity in the pre-Viking period, Viking Age, and Middle Ages<sup>1</sup>.

## 7.2 The sites

Before embarking upon analysis of the combs from northern England, it is apposite to briefly introduce the sites and regions to which they relate. Combs come from 100 sites (figure 7.1, table 7.1), and though space does not permit a detailed survey of the nature of these sites, some background is provided in Appendix II.

The bulk of the material comes from Yorkshire, and the city of York in particular, but there is also a large group from Lincolnshire. Other areas are represented only by individual finds. Unfortunately, material from some sites was unavailable for direct observation, but published and unpublished data provided by the excavators facilitated a certain amount of analysis. Nonetheless, confident determinations regarding raw materials, rivet materials, quality of manufacture, or use wear could not be made on the basis of these sources alone, thus excluding them from some of the analyses (including correspondence analysis). This was the case for the pre-Viking settlement site of West Heslerton (Yorkshire), the important high status - and possibly monastic - pre-Viking to Viking Age site of Flixborough (Lincolnshire), and also for the small collection from the ninth to twelfth-century fortified manorial site of Goltho (Lincolnshire). All combs from these sites were included in the database, with 'unknown' entries added for raw materials, rivet materials, quality of manufacture, and use wear. Insofar as identifications or comments made in original finds reports related to these attributes, these were noted for use in discussion.

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<sup>1</sup> In the following, the chronological terms 'pre-Viking' (pre-10<sup>th</sup> century), 'Viking Age' (10<sup>th</sup>-11<sup>th</sup> century), and 'medieval' (post-11<sup>th</sup> century) will be used throughout, as, unlike terms such as 'Anglian', 'Anglo-Scandinavian', or 'Norman' these can be considered 'identity-neutral'. Similarly, sites are described as 'burial/cemetery', 'large settlement', or 'small settlement'. The terms 'rural' and 'urban' are avoided herein.

Among the sites, a few have large numbers of combs that are sufficiently securely phased and well published to allow good chronological resolution, and these will be used as case studies in the following analyses and discussions (fig. 7.2). The key sites are 16-24 Coppergate and 46-54 Fishergate (York), while several small collections from Lincoln area also of interest<sup>2</sup>. To these one may add West Heslerton and Flixborough, for which limited data was available (see above). There is good phasing and dating information for Coppergate, Fishergate, and Flixborough, but in the absence of detailed published excavation reports for sites other than Flaxengate, much of the material from Lincoln can only be classified as 'Viking Age' or 'medieval'. Similarly, internal phasing at West Heslerton is problematic, though the sequence as a whole can be dated between the fifth and ninth centuries, and there is no evidence for activity after c. AD 850 (D. Powlesland *pers comm.*). Material from other sites was included in all analyses, and reference is made to particular securely dated combs. This helps to develop a broader picture against which the more focused case studies might be compared.

All in all, though this survey is not comprehensive, it should be representative of the combs of early medieval north-east England. It would be unwise to extrapolate too much from this study area, and the findings should not be assumed to be indicative of England as a whole. Nonetheless, this regional case study is of interest in its own right, and provides useful comparanda for studies elsewhere in Britain and Europe, both in this thesis (Chapter 8) and in the future.

In the first instance, the corpus as a whole will be discussed type by type, using the chronology established in Chapter 6 to broadly date any patterning recognised across types. Finer chronology is established by focusing on the key settlements of York, Lincoln, Flixborough, and West Heslerton. This approach allows the comparison of collections on both chronological and spatial dimensions, and facilitates the recognition of patterning that may relate to the construction of identity.

### 7.3 Typology

Though the collection from northern England is large (1461 combs, comb fragments, cases, and pieces of related waste), few combs come from stratified contexts at well-

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<sup>2</sup> There is also a large collection from excavations at Wharram (Yorkshire), but the phasing for the Viking

studied, fully published sites. Thus, in the following, a wide-ranging typological review lays a framework for study, but this is coupled with more focused analyses of large, relatively well-understood collections. In addition, all of the complete combs and large fragments (ie 50-75% complete) in this study are subjected to correspondence analysis, in an attempt to identify latent patterning. The main categorical variables may be summarised as follows: raw materials, overall length, overall shape, connecting plate cross section, connecting plate profile, endplate shape, decorative motifs, decorative schemes, rivet material, riveting practice, tooth graduation, and tooth differentiation. It is hoped that the recognition of patterning on these variables might provide a more secure basis for dating. This, in turn may allow the corpus to be broken up and analysed period-by-period for regional and other variation, without over-reliance on broad site phasing or traditional typology.

For the English corpus, correspondence analysis revealed no clear patterning in the group as a whole, despite repeated analysis and manipulation (see Chapter 6). This probably reflects the relatively compressed chronology of the English material; ninth-century settlement sites are rare, and combs frequently dated to this period (i.e. Ambrosiani A combs, herein referred to as type 5) are very few. Similarly, the double-sided composite combs of Late Norse Scotland are (with few exceptions, see above) absent in England; from about the fourteenth century a shift to type 14b simple combs is apparent, and these are sufficiently different from the composite combs to make their incorporation into the correspondence analyses inappropriate.

### **7.3.1 Temporal and spatial patterning**

Thus, a type-by-type analysis seems most appropriate. An overview of accepted comb chronology was provided in chapter 2, and, based on this and first-hand experience of material from the regions of interest, an overarching typological scheme was outlined in Chapter 6. In this section, combs from northern England are subjected to quantitative analysis, with reference to both the aforementioned typology and the absolute chronologies established for individual sites. This will serve to highlight regional patterning in comb use through time, and will act as a foundation upon which more fine-grained analyses may be based.

Where possible, correspondence analyses are used to support and illuminate quantitative analyses. For the most part analysis of types in isolation proved inconclusive, as investigations of types 4, 7, and 12 simply demonstrated internal homogeneity, with the vast majority of examples being constructed using red deer antler and iron rivets at alternating billet edges (see below), and displaying a limited repertoire of decorative motifs and schemes (see below). Furthermore, similar analyses were not possible for types 1, 2a-c, 3, 5, or 9, due to the restrictions of sample size (particularly after combs with 'unknown' variable values were removed from the analysis). Nonetheless, some investigations were more fruitful, and these are discussed in the following.

**Table 7.2** shows the diversity of types recorded from the survey of material recovered in England. Of the 214 complete and partial comb fragments that could be unambiguously assigned to type, the most common are types 12 (double-sided), 3 (handled), 4 (riveted mounts), 6 and 7 (Ambrosiani B and variant). In addition to type 1a, which generally predates our period of interest (though see above), type 14b combs were only recorded in late medieval and postmedieval contexts, and will not be studied in detail herein, as they are much less common in Scotland. Combs characterised as 'other' require some explanation. Some combs probably belong to periods lying outside of the chronological remit of this thesis (the postmedieval and early Modern periods in particular). However, context details were unavailable for much of this material, so it was impossible to exclude it from the database. Furthermore, a number of fragmentary, insecurely identified objects (such as bone plates, handles, and decorative mounts) were recorded, as it was initially thought that they might relate to combs. In hindsight, it became clear that they did not, but they are included in the database and **table 7.2** for the sake of completeness. Some examples of this undated and unidentified material are illustrated in **fig. 7.3**. Based on previous research (see Chapters 2 and 6, one would suspect that types 1b, 2a, 2b, and 12 were most popular in the Mid Saxon period, with types 4, 6 and 7 becoming more important from the ninth (or probably tenth) centuries. However, site-by-site analyses are necessary to confirm this (see below).

Although not the focus of the thesis, combs from ostensible Early to Middle Saxon contexts were recorded in the database. This allowed investigations into the relationships between various pre-Viking Age combs (that is whether there was any evidence for the continuity of certain early types into the seventh or eighth centuries).

The contexts of interest in our study area were cemeteries and burials such as those at Castledyke South (Drinkall and Foreman 1998) Baston (Mayes and Dean 1976) Garton, Kelleythorpe, and Cheesecake Hill (Mortimer 1905). As expected, comb type 1a is most common in these contexts (figure 7.4), while types 1b, 2a, 2b, and 3 are more common in seventh to ninth-century contexts at settlements such as Flixborough, West Heslerton and Wharram (see below). However, while it is perhaps unsurprising to find five type 1a combs at the fifth to ninth-century settlement of West Heslerton (though there are no combs from the associated cemetery, Haughton and Powlesland 1999), the presence of type 2b combs at the Castledyke South cemetery (Drinkall and Foreman 1998, not recorded in this survey), and 'hybrid' type 1a/2b combs from a mid-eighth-century context at Wharram (MacGregor 1992; Dickinson 1992), and in a sixth-century association at Hayton (Dickinson 1992: 56) are interesting. It is thus clear that types 1a and 2b form opposite ends of a chronological development, and types 1b and 2a are probably part of the same sequence. Indeed, Foreman (pers comm; see also Dickinson 1992) has suggested that the Hayton and Wharram combs mentioned above form part of a distinctive northern tradition, and this seems likely.

No comparable transition can be seen in double-sided composite combs; type 12 combs are present in both Early and Middle Saxon settlement and burial contexts (see Mortimer 1905; West 1985: 126-128; Drinkall and Foreman 1998). Though many early examples are more ornate than their seventh to ninth-century successors, the overall form fits within the range of variation covered by later type 12 combs. Thus, both double-sided and single-sided pre-Viking combs show some degree of continuity over the period between the sixth and ninth centuries. Though types 12, 1b, 2a, 2b and 3 do have continental parallels, if type 3 is accepted as a local innovation (see chapter 6; Riddler 1990), then there is no discernible evidence for the introduction of comb forms from external sources.

At sites such as Blue Bridge Lane, Fishergate House, and Paddock Hill, Thwing, single-sided combs dominate. Types represented include 2b (hogbacked), 1b (double-barred), and 3 (handled; particularly from Thwing). Thus, there seem to have been a considerable variety of combs in circulation in the north of England during the pre-Viking period, but the chorological and chronological associations of each form are a little unclear. Comparisons with other European corpora (see chapter 5) are of little help in this regard. Indeed, as types 10 and 1a passed out of use, types 12, 1b, 2a, 2b,

and 3 became important. These types seem to have been contemporary with one another, and the ethnic (*i.e.* Frisian) associations that have been suggested for certain forms of types 1b and 3 have been well-challenged (*cf* MacGregor 1975a; Waterman 1959: 89-90; Hills 1981; Riddler 1990). One must therefore explain this diversity in alternative terms, and it might be suggested that each comb type had its own symbolic associations. Perhaps some were reserved for those of high status or wealth, while others had particular uses. For instance, some may have been intended for display, while others were used in the privacy of one's home. Similarly, some may have been seen as appropriate gifts, while others were not. With this in mind, it is interesting that the large collection from West Heselton is more homogeneous than Fishergate's, perhaps suggesting greater diversity amongst consumers at the latter (see below).

An understanding of the sequence of comb development between the ninth and tenth centuries, and of the rate at which change occurred, are fundamental to an appreciation of the role of combs in the expression of identity. Unfortunately, it is not always possible to separate combs from pre-Viking and Viking Age levels on purely stratigraphic grounds. At the South Manor, Wharram, for instance, though some material derives from dated pre-Viking and Viking Age phases, much is residual in later medieval levels. Similar problems are apparent at Cottam. The same may be true for Paddock Hill, Thwing, where activity extends from the Middle Saxon period into the tenth century<sup>3</sup>.

Not only is the chronology at Wharram's South Manor insecure, but heavy fragmentation means that few of the combs may be confidently identified to type. Nevertheless, there are closer parallels with material from Fishergate than with that from the earlier phases of Coppergate. This may suggest either that most of the combs date from the eighth or early ninth century, or that they preserve an older tradition into the late ninth, or even tenth century. Single- and double-sided combs are equally represented, and the only largely complete fragment (no. 25) appears to be a hog-backed (type 2b) variant with possible zoomorphic terminals. Similarly, the few comb remains excavated from Cottam could be seen to fit into the Middle Saxon canon, as finds included double-sided toothplates, flat bone connecting plates, and a largely complete handled comb. All identifiable comb fragments came from contexts dated to the ninth

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<sup>3</sup> The site has not yet been published, and phasing is unavailable at present.

and tenth centuries (though it should be stated that the double-sided fragment is small and very degraded, and could conceivably be residual) so one may perceive this in a similar way to Wharram.

Given the stratigraphic problems at these sites, it is germane to consider the chronology and distributions of northern England's Viking Age comb types in broad terms. Type 4 riveted mounts are of some interest, as they seem to be absent from small settlements, and are particularly common at York. Indeed, their concentration at Coppergate (particularly around the street frontage of tenement C; see MacGregor *et al.* 1999: 1953-1954) might be taken to suggest that they were manufactured together with antler combs in this area, perhaps by the same workers.

Type 5 (Ambrosiani A) combs are virtually absent from northern England. A few examples from Coppergate were described as 'A' combs (MacGregor *et al.* 1999: 1930), but this identification is insecure, as it appears to be based entirely upon cross-sectional depth, rather than overall dimensions, morphology, or ornament (see Smirnova 2005: 23). Perhaps a more likely candidate is one from Fishergate (unfortunately residual in a thirteenth century context, **figure 7.5a**, see below), while a small fragment from Caistor, Lincolnshire is certain (**figure 7.5b**; see Thompson 1954). Waterman (1959: fig. 16,1) illustrates an example from Clifford Street (**fig. 7.5c**), York, though this comb could not be traced in the current survey. It is also notable that examples are known from south-east Scotland (North Berwick, and Castle Park, Dunbar, see Chapter 8); an area under Anglian influence at the time.

Type 6 and 7 combs are much more common, reflecting the late date of most recognised Viking Age settlements in England. Finds from Lurk Lane and Eastgate in Beverley bear comparison with the Coppergate material, while the few comb fragments excavated from the high status fortified site of Goltho in Lincolnshire were probably similar single-sided types. The one moderately well preserved fragment recovered from the site seems to be a type 6 variant, though its elaborate endplate decoration arguably has more in common with Mid Saxon types (particularly 2b; **fig. 7.6**).

Types 8a and 8b also appear to date to the tenth and eleventh centuries, though they may persist as late as the twelfth in Ireland (Dunlevy 1988: 367; Chapter 6). Indeed, they are far more numerous at Dublin than in either York or Lincoln, but their presence

here is nonetheless notable. Whether the York and Lincoln examples represent displaced Irish combs or 'English' copies is uncertain, but their presence at Clifford Street - where they were associated with tenth-eleventh century working waste - is notable (Waterman 1959). Unfortunately, the site lacks contextual detail, so the degree to which the association is meaningful cannot be assessed. Though not common, types 8a and 8b nonetheless seem to have been widely dispersed around England, with examples recorded at London (Pritchard 1991: fig. 3.77), Winchester (Galloway 1990: fig. 183), and Canterbury (Riddler 1991). One should also note the occurrence of type 14a (thick, one-piece double-sided combs) from St. Mark's East (Lincoln), and a twelfth-century context at Fishergate House (York). These combs are much smaller than their Scandinavian contemporaries, but may well belong to the same tradition.

Although many comb types failed to produce meaningful results, correspondence analysis of type 6 produced interesting patterning (fig. 7.7; table 7.3). At the bottom right are combs with connecting plates that show rudimentary faceting (approaching types 8a or 8b). These combs are often decorated with ring-and-dot, which is frequently arranged as a single central line of motifs (decorative scheme 1H). Moving left along the 'curve', connecting plates seem to display a smoother, more plano-convex section, and may be decorated with incised lines; zigzags are particularly important. At the extreme end of the parabola are combs with bowed profiles and sloping, unhorned endplates (endplate form 1C). These combs share some similarities with type 7. Unfortunately, temporal resolution is unforthcoming, as, at Coppergate in particular, many of the finds are residual in later layers (see Hall 1999: 1881; Mainman and Rogers 2004: 476). This makes it impossible to ascertain if and how the progression relates to chronology, but the pattern lends support to the typology applied herein. Furthermore, it is perhaps indicative of inter-relationships between the types.

Analysis of type 8 was also informative (fig. 7.8; table 7.4). In the first instance, the few examples of type 8c formed outliers and confused the analysis somewhat. With their removal, a curve was discernible on a plot of the 2nd and 3rd axes. Notably, these relate directly to the previously outlined subgroups 8a (triangular section) and 8b (trapezoidal section), confirming the legitimacy of this typology. Type 8a can be seen at the left-hand tail of the graph, characterised by the triangular section of their connecting plates, their use of chevron ornament, and the absence of any clearly delineated

decorative fields. However, most type 8 combs from the sample fit into subgroup 8b, and these appear quite disparate, being strung out on the basis of decorative motifs and overall form (those near the right-hand tail are characterised by bowed connecting plates and a long, bowed profile). One might also note a division between combs of both types 8a and 8b at the tails of the curve, which tend to have endplates of form 1A (straight and unhorned), and those around and above the origin, which have sloping (1C) or ornate (1F) endplate forms. This analysis suffers from a lack of well-provenanced and dated combs, with most combs coming from antiquarian investigations in York, and as types 8a and 8b are both widely distributed in tenth to twelfth century levels in England, it is difficult to directly read chronology from the graph. Combs 1721 and 1725 come from Clifford Street, ostensibly from homogeneous deposits dated to the late tenth and eleventh century (Waterman 1959). Those from more recent excavations include comb 1634 (type 8a found at Queens Hotel, Micklegate), 1716 (type 8a found in a mid-twelfth-century context within Coppergate's phase 6), and number 1451 (type 8b from the tenth century phase 4B at Coppergate). Thus, the curve fails to show any clear chronological progression, but it nonetheless seems likely that one form developed out of the other. The problem might be resolved by seriation of dated examples of type 8 combs from Ireland, western Scotland, and the southern Baltic area.

Evidence for comb use in the medieval period is less forthcoming than for the pre-Viking period or Viking Age. Type 8c combs are poorly represented in the study area, and very few come from securely dated contexts. However, examples from Saddler Street, Durham (Carver 1979: 24) and Prudhoe Castle can be dated to the twelfth and thirteenth centuries respectively, while large collections from Waterford, Cork, and Dublin support this dating (Chapter 6). These relatively simple, undecorated combs are unaccompanied by other forms, and, as was suggested in Chapter 6, there does seem to be a lack of evidence for the use of combs prior to the appearance of type 14b (not earlier than the fourteenth century).

However, it is important to note the presence of a small number of type 9 and 13 combs in the study area. There is a type 9 comb with T-shaped openwork ornament from Clifford Street (Wiberg type E1/E2), York, a 'false-ribbed' plano-piriform example (Wiberg type E5) from Silver Street, Lincoln, a fragmentary example of a similar form from nearby Nelson Road, Fiskerton, and two small/tiny fragments from

phases 5b and 6 at Coppergate. Notably, type 9 combs have been recorded south of the Danelaw, as in London (Smith 1909; MacGregor 1985: 91). One might also note the presence of a small number of type 9 'imitations', combs of type 9 morphology but constructed using iron rivets (type 9s from Scandinavia are invariably made using copper alloy rivets, see chapter 6). Two such examples are known from York (1487 and 1571, fig. 7.9).

Type 13 combs are even less common, with just a single fragment (Wiberg type D2) in an eleventh to twelfth-century phase 6 context at Coppergate, and a small, undiagnostic fragment with openwork decoration from a twelfth-century level at Lurk Lane, Beverley (though the context does seem to have been disturbed) (fig. 7.10). In general, combs of types 9 and 13 are lacking in post- twelfth-century levels, and all identifiable forms fit into the earlier variants of these types (see below). Most examples probably represent the lost property of travellers in the eleventh and twelfth centuries. Two examples of type 14a (see below) are more difficult to interpret, but their raw materials (see below) and diminutive size separate them from its Scandinavian contemporaries.

Notwithstanding the problems of the small sample, one might suggest that by the late medieval period connections between the Scandinavian and English combmaking industries had essentially been severed.

In general, combs from Anglo-Norman England seems to follow the expected trend from Ambrosiani's B-combs into simpler, more functional variants, until eventually a return to the simple, one-piece comb, now with fine, differentiated teeth (type 14b) is made in the later Middle Ages. Examples are known from a number of localities, including York, Lincoln, and Durham (fig. 7.11). Moreover, they are ubiquitous within these settlements; in York, for instance, type 14b combs are known from the Bedern, Back Swinegate, Skeldergate, Clementhorpe, Union Terrace, and Walmgate, while examples in Lincoln come from West Bight and Dane's Terrace. They are also known at rural and ecclesiastical sites, such as Bardney Abbey in Lincolnshire, and Beaurepaire, Durham. Such combs are known in a variety of sizes, and there is some variation in end profile, but otherwise gross morphology and ornament are uniform. They surely represent the output of a reorganised, now truly industrial enterprise. All examples from the sample area were recorded, but given the difficulty of comparing them to the

Scottish corpus (which is composed primarily of composite combs even in later periods; see Chapter 8), they are not discussed in detail.

Though 14b is the dominant one-piece form, types 14a and 14c are also represented. Small type 14a combs are known from St. Mark's East, Lincoln, and Fishergate House, York, and there is a single type 14c comb from the Bedern (also York) which may be distinguished from type 14b by its use of ivory and ornate, sculpted form.

Correspondence analysis of type 14b showed some interesting results, though the sample size was small. One might have expected these combs to cluster together as a single group, or to separate out into a number of small groups, defined primarily by variations in end profile, but it can be seen that the analysis produced something of a curve (fig. 7.12, Table 7.5), which may be suggestive of internal chronology. They are divided up largely according to end profile form, though it is notable that a smaller range of variables were used in this analysis than for composite combs, given their simpler, more uniform morphology. Moreover, the sample size is small, and closely dated combs are even fewer. A much more detailed study, focused directly on these combs, would be necessary in order to fully interpret the patterning.

In all, it is clear that a diversity of types were in circulation at any one time. This may again be explained in terms of particular comb forms having assigned and understood social and functional roles. Type 4 combs are certainly best understood as inexpensive alternatives to antler composite combs, while types 5 and 6 clearly articulate trends popular in Scandinavia and continental Europe. The precise associations of type 3 are difficult to establish, but they clearly express some level of continuity from the pre-Viking period. Type 7 might also be seen in this light, as its similarity of form with type 2b is clear. However, the situation is complex, as type 7 is also known in southern Scandinavia (Tempel 1969: Taf 23) and Ireland (Dublevy 1988).

### 7.3.2 Case studies

The spatial and chronological distribution of comb types within the sample area is not uniform, and this is key to their understanding. In order to treat the data at a higher resolution, the combs from a selection of sites and localities will be compared and contrasted.

The key sites for the pre-Viking period are West Heslerton and 46-54 Fishergate, York. As can be seen from phases 3a –3z in **table 7.6**, at Fishergate the most common combs were types 2a, 2b and 3, while the presence of types 1b and 12 are also notable<sup>4</sup>. This pattern is reproduced in smaller collections, and at sites such as Blue Bridge Lane, Fishergate House, and Paddock Hill, Thwing, single-sided combs dominate (see above).

However, the material from West Heslerton (**table 7.7**) differs from the other collections from the north of England, as here type 12 double-sided combs dominate completely. Given the volume of material from the site, this has a major impact on the overall distribution of types in northern England (**table 7.2**), such that the frequency of type 12 combs dwarfs that of any single-sided type. One comb fragment, number 2047 (**fig. 7.13**) rather stands out, as it seems to be of type 5, and may conceivably indicate the activity onsite of someone that had had close contact with Scandinavia or northern continental Europe in the ninth or early tenth century. The rest of the corpus would traditionally be seen to fit into the 'Middle Saxon' repertoire.

Nonetheless, it is clear that the pre-Viking corpus was not homogeneous, as a number of comb types were in circulation at any given time. Neither was the regional distribution of types uniform; the West Heslerton collection shows considerably more homogeneity (being dominated by type 12 combs) than Fishergate or Blue Bridge Lane. The greater diversity apparent at York could conceivably indicate wider regional and overseas contacts.

One might expect to see interesting patterning at sites that straddle the pre-Viking/Viking Age transition. At Flixborough (**table 7.8**), the type distribution may be compared with Fishergate and West Heslerton. Double-sided combs (type 12) are dominant in layers dated - on the basis of pottery - to between the ninth and mid-tenth centuries. Moreover, single-sided forms present include types 2a, 2b, 1b, and 3, while types 5-8 are absent. Traditionally, the corpus would be described as 'Middle Saxon' in style. It might be suggested that a decision was taken to continue the use of long-established insular forms, perhaps even into the tenth century. However, eighth- and

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<sup>4</sup> The presence of small/tiny fragments of type 4 is also notable, but it is conceivable that these examples are either intrusive, or relate to type 2a, rather than type 4.

ninth-century metalwork is also known from these layers, giving cause for concern regarding residuality.

Foreman points out that raw material use in phases 4ii-5B (mid-ninth to late ninth/mid-tenth century) is relatively homogeneous, in contrast to the mixture of bone and antler in later levels, suggesting that the former may be relatively undisturbed. Moreover, type 12 combs are less fragmented and abraded than examples of types 1b, 2a and 2b in the same levels, suggesting that the latter have been subjected to a greater degree of reworking. Decoration on type 3 combs includes chevron ornament (dated to the late-tenth and eleventh centuries; see below), while there is also a fragmentary example of a type 4 riveted mount, suggesting that some of these combs at least belong in the tenth to twelfth-century levels in which they were found. At present, this situation is difficult to resolve, but it would be simplistic to suggest that the presence of type 12 combs in ninth- and tenth-century contexts is the result of redeposition alone. Indeed, Foreman (in press) believes it unlikely that they were deposited prior to the ninth century. It is of course possible that some of the tenth-century examples are residual (particularly those found in middens, rather than floor deposits). All in all, the evidence is ambiguous, but one should not dismiss the possibility of an extended currency for type 12.

The possibility of continuity in comb use into the Viking Age is important, as academic consensus is that combs from this period were highly standardised (*e.g.* Ambrosiani 1981; MacGregor *et al.* 1999: 1939). Such uniformity is not clearly evident in the present corpus; though the majority of combs from tenth and eleventh-century dated contexts fit into types 6 and 7, these have been found alongside types 3, 4, 8a and 8b, while the continuity of types 1b, 2a, 2b and 12 remains unconfirmed. Moreover, even within types 6 and 7, one may perceive formal variation. Unusual examples from York include semi-double forms (fig. 7.14; see Glossary), a comb with several bone/antler toothplates and one very large horn plate<sup>5</sup> (fig. 7.15), and a single plate of horn with teeth cut into it (the dimensions of which approximate those of the type 4 riveted mounts) (fig. 7.16).

Many of York's Viking Age and medieval combs come from unpublished interventions and antiquarian investigations. However, the collection from excavations at 16-24

Coppergate is well-published (MacGregor *et al.* 1999), and is of sufficient size and diversity to be taken as broadly representative of York as a whole, at least for the purposes of identifying chronological patterning.

At Coppergate (table 7.9), a diversity of comb types were recovered from Viking Age levels. Type 5 is poorly represented, but this is unsurprising, given that the majority of material comes from levels dated to the tenth and eleventh centuries. Types 6 and 7 dominate, though types 3 and 4 are also important. Other types are present only in small numbers. One should be cautious when interpreting the data, particularly when considering small/tiny fragments. Type 12, for example, is evidenced in period 4b and 5a as small/tiny fragments only, and while these may relate to a tenth-century currency for type 12 combs, given their fragmentary state, they may be the residual remainder of earlier activity.

At Lincoln, burial conditions are not conducive to the preservation of skeletal material, and consequently bone/antler artefacts are rare in medieval levels across the city (Jones *et al.* 2003: 208). Few sites in the city have been fully published, and in the first instance it is appropriate to focus on the well-known site at Flaxengate (table 7.10).

The presence of types 4, 6, 7, and 8a are consistent with the site's Viking Age date, but the number of combs is very small. Moreover, high fragmentation, and the presence of two presumably intrusive type 6 combs in late ninth-century deposits, suggest that there has been some reworking. It is therefore problematic to judge patterns within this sequence as directly reflective of chronological trends, and in the discussions that follow, material from across Lincoln is studied in concert, necessarily divided only by site.

The relevant sites are outlined in table 7.11. Most of these sites lie in the 'lower city' area that was the focus of Viking Age settlement, and the ceramic distribution is indicative of the foundation of settlement and occupation in the area around Silver Street, Flaxengate, and Grantham Place from the tenth century. Steep Hill, the main thoroughfare to the Upper City, does not seem to have been laid out until the mid-eleventh century, while evidence for the medieval phases of settlement comes from

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<sup>5</sup> This horn plate cannot represent a later addition, as it is secured only with end rivets; insufficient to secure any proposed bone/antler predecessors.

West Parade, Dane's Terrace, Hungate, Swan Street, Steep Hill, Greyfriars, Silver Street, and St. Benedict's Square. It is no surprise to see that it is these sites that yield combs of types 9 and 14b. South of the city walls, excavations at Holmes Grain Warehouse and St Mary's Guildhall evidence activity from the medieval period.

The combs from Lincoln show greater similarity with the collection from Coppergate than with those from Fishergate, confirming comb types 6 and 7 as characteristic of the Viking Age. However, a closer comparison of the collections from York and Lincoln may be informative, as it might be useful to look for regional, rather than merely chronological variations. Though there is broad similarity, it might be pointed out that a greater proportion of combs from Lincoln are type 4 riveted mounts, while type 3 handled combs are absent from there, and types 6 and 7 are less common than they are in York. If type 4 combs may be considered 'inexpensive', then this may be suggestive of a smaller population able to afford the more desirable type 6 and 7 combs.

Nonetheless, the ornate quality of some of the type 6 and 7 examples (see below) is indicative of the presence of at least some discerning, high status consumers. The absence of type 3 combs at Lincoln may say something about the demographic group that used these combs. However, we should consider this collection with caution, and may only propose several possible circumstances, as its small and fragmentary nature confounds confident interpretation.

Having briefly discussed chronological and regional patterning in the frequencies of comb types, one might consider the differences between large and small settlements. This is difficult, as the West Heslerton collection predates AD 850, and is thus inappropriate for comparison with the collections from Coppergate and Lincoln. Indeed, there are few collections from small settlement sites that can be directly dated to the tenth and eleventh centuries. The stratigraphic problems at Flixborough and Wharram have already been mentioned, but it seems unlikely that *all* of the combs from the former site predate the tenth century. Indeed, the lack of combs from the smaller recognised Viking Age settlements is itself interesting, and may suggest that the persistence of 'native' forms was widespread at such sites, effectively rendering them invisible as 'Viking Age'. At present, the situation must remain unconfirmed, but there is a possibility that the inhabitants of small Viking Age settlements were ignorant of, resistant to, or unable to gain access to, the comb forms popular in the larger markets of the time.

## 7.4 Ornamental traits

Although it has been informative to consider regional and temporal variations in overall form, there may be much greater potential in the study of patterning of discrete morphological and decorative traits. Thus, herein the focus will be on phenomena such as decorative motifs and arrangements, and in later sections variations in manufacturing techniques and patterns of use will be discussed. In the following analyses, large fragments and complete combs are the focus of study, as only in such cases can one be certain of both comb type and all details relating to ornament, but where appropriate, support is provided by the much larger quantities of small and tiny fragments.

For the purposes of analysis, ornament may be broken down into 3 analytical units (see Chapter 4):

- decorative motifs (individual elements, such as ring-and-dot, vertical lines, or saltires)
- Motif arrangements (relates to ring-and-dot motifs, which may be situated so as to form figure-8, recumbent-S, or T-shape designs)
- Decorative schemes (describes the comb's overall format - in terms of its division into vertical fields or horizontal panels - within which further ornament is articulated)

Geographical or stylistic (cultural) variation might be expected to be manifested in the presence/absence and arrangement of motifs. **Table 7.12** shows that vertical lines are by far the most common motif on combs within the northern England sample. This is not surprising, given that they are frequently used as parts of more complex designs - delineating field boundaries, for instance - as well as acting as important motifs in their own right. The next most important designs are ring-and-dot, and saltire/diamond/cross-hatch motifs (the latter group often being indistinguishable from one another). Horizontal and marginal lines may be seen in much the same way as vertical lines, and the low frequency of zoomorphism and interlace probably reflects the paucity of excavated ninth century settlements showing Scandinavian influence in the study area.

More may be learned by considering the relative popularity of motifs on the various comb types. Certain decorative motifs have previously been noted as useful chronological indicators (see Smirnova 2005: 57). For instance, while ring-and-dot is present on a wide variety of combs, it is most common on type 12, suggesting a particular 'pre-Viking' currency (table 7.12). Similarly, interlace and saltires are defining features of Viking Age combs, and are herein particularly common on types 2-7. The apparent absence of interlace on combs of type 5 is notable, though the sample size is small, and a small fragment of type 5 comb from Lincolnshire does display such ornament.

Vertical lines are less chronologically informative; though particularly important on Viking Age combs, they are ubiquitous components in the 'laying out' of comb ornament, so much so that they are not considered in MacGregor's (1999: table 169) analysis of ornament at Coppergate. Chevrons, chequerboard designs, meander patterns, Y-motifs, and zig-zags (herein grouped together as 'geometric' motifs) are of greater utility. All were important decorative motifs in sculpture from the early eleventh-century (see Friar 2003: 150-152) and are found on combs of Viking Age and medieval date across Europe (Dunlevy 1988; Smirnova 2005: 57), and one might well note the importance of this motif on combs of type 8a. Their occurrence on a number of type 6 and 7 combs in York might be taken to suggest the persistence of these forms into the eleventh century. This overlap in decorative repertoire is in some cases accompanied by rudimentary faceting (comb 1502 is of particular note, fig. 7.17), though given the poor chronological resolution it is impossible to say whether these 'hybrids' prefigure or mimic type 8a. Perhaps most chronologically diagnostic are openwork T-motifs, which Smirnova (2005: 57) dates to the late twelfth century. Within the Viking Age and medieval corpus this ornamental technique seems limited to type 9, and (rarely) type 13 combs (see Chapter 5).

Similar patterning is apparent when one compares particular sites. Considering first the situations at West Heslerton, Fishergate, and Coppergate, there is evidence for change in preferences for particular motifs. One may note a possible increased importance of geometric motifs in the Viking Age (compare tables 7.13 and 7.14). Most examples from this category at Fishergate display only simple obliques, while, on the basis of West Heslerton at least, 'pre-Viking' combs were generally more likely to display ring-and-dot ornament. However, this pattern is not clear-cut, as ring-and-dot ornament persists into

Viking Age levels in York and Lincoln. Moreover, the dominance of geometric ornament is also apparent in combs from Viking Age levels at Flixborough, although the most common form is type 12. If these combs are genuinely of Viking Age date, then new ornamental conventions were applied to the persistent 'Mid Saxon' comb forms. The alternative is that the manufacturers of the Flixborough combs anticipated Viking Age ornament, perhaps through contact with merchants from overseas.

A comparison of the patterns seen at York (table 7.14) and Lincoln (table 7.16) reveals little difference in the use of decorative motifs. Thus, regional variation is not apparent. Neither is there evidence for variation according to settlement character; West Heslerton differs primarily due to chronology (table 7.15), but if Flixborough (table 7.17) is accepted as representative of a small Viking Age settlement, then it is notable that its motif distribution has much in common with Coppergate.

In general, the case studies indicate the existence of variability in preferences for decorative motifs, suggesting that ornament has potential for interpretation in terms of identity. However, the complex chronological and regional dimensions to this variation must first be disentangled (Chapter 9).

Similar variability may be apparent in the arrangement of decorative motifs. Thus, quite apart from the presence of motifs themselves, and the scheme into which they are placed, it may be possible to identify patterns articulated through the juxtaposition of different elements. This is particularly true in the case of ring-and-dot decoration. Ring-and-dot motifs are frequently arranged in 'strings' that may be straight lines, T-shapes, I-shapes, recumbent S-shapes or figure 8s. Certain designs (such as recumbent S and figure-8s) were particularly important in the Viking Age. Notably, in Scandinavia these patterns are common on combs from both the Viking Age and the pre-Viking Vendel period. Other arrangements proved to be of limited use in dating, and they look likely to be of greater utility in assessing regional variation.

The sample size for England is rather small, but some patterns are worth noting (table 7.18). Interestingly, the recumbent-S arrangement so common in Scandinavia is absent in the sample area, but fragments of 'Saxon' types 1 and 12 bearing figure-8s of ring-and-dot are known (e.g. Early Saxon Kelleythorpe, Driffield). Single horizontal lines of motifs are common on most comb types (their absence from type 8a is no doubt related

to the form's triangular section; the apex would prevent the application of a central decorative line). Parallel lines are fairly ubiquitous in combs other than the often highly ornamented type 1a (earliest Saxon), while decoration of type 6 combs is notable for its conservatism (the consistent use of single, horizontal lines of ring-and-dot).

Interestingly, interconnected chains of ring-and-dot (fig. 7.18) are only important on 'pre-Viking' types 2b and 12. The total absence of recorded decoration on certain comb forms is also worthy of consideration. Type 4 riveted mounts never feature any incised decoration at all (at least within this sample), and the low frequency of type 5 combs in general is responsible for the absence of records relating to this type from the table. However the general lack of type 7 combs with ring-and-dot decoration is puzzling. Though it probably relates to their place as a distinctly Viking Age phenomenon, and the concentration on incised line ornament clearly distinguishes them from the otherwise similar type 2b 'hogback' combs of the Middle Saxon period, it is notable that even some type 6 and type 8 combs feature ring-and-dot ornament (fig. 7.19; see also MacGregor *et al.* 1999: fig. 889, 7605 and 7611).

In sum, although the canon of possible arrangements in both pre-Viking and Viking-Age England is relatively limited (in comparison to that seen in Frisia and Scandinavia), certain patterns are discernible. The use of interconnected chains of ring-and-dot, and complex arrangements such as wheels, are limited to types 1a, 2b, and 12, while Viking Age forms 6 and 7 are marked by simpler designs. Whether this is best seen as a stylistic (cultural), or chronological difference is a moot point (see Chapter 5); in practice it is probably unreasonable to attempt to separate the two.

When one compares ring-and-dot arrangements at particular sites, it is difficult to detect a clear chronological development. Only Fishergate (table 7.19) and Coppergate (table 7.20) provide sufficient data for such a comparison, and little patterning is apparent here. The Coppergate sequence is dominated by simple lines or ring-and-dot, and lines with tangents, while the only stratified example of interconnected motifs comes from a phase 3 context. Unfortunately, the sample from Fishergate is too small to interpret, but there is no reason to doubt the trends evident in the material from northern England as a whole.

The next level of analysis concerns decorative *schemes*. Lyuba Smirnova (2002) found such schemes to be of greater utility in dating than were individual motifs, and though her analysis requires adaptation in order to be applied herein<sup>6</sup>, the approach demonstrates considerable potential. Smirnova recognised eight schemes (with variants) for single-sided combs from Novgorod. In the present study, as the geographical foci are wider, and the system is to be applied to both double- and single-sided combs, 24 schemes were used (see Chapter 4). The distribution of these schemes in relation to my typology allows a number of (probably chronological) trends to be discerned (table 7.21). Only large fragments and complete combs are included in this analysis, as confident identification of decorative scheme is not possible for smaller fragments.

Scheme 1A (central field) is most common, and, just as it is popular on combs of types 5 and 6 on the continent (see Ulbricht 1978; Ambrosiani 1981), in northern England it is particularly dominant on types 6 and 7. Scheme 1B (horizontal panelling) is common on types 8a and b, reflecting the faceted morphology of the connecting plates. Scheme 1L (double-incised marginal lines) is restricted to type 1a combs, paralleling the early dating of this motif on the continent, where it is seen on the very earliest examples of type 5 combs (eighth century) as well as 'Saxon' type combs. The absence of schemes 1M and N (employing rivets as decorative elements) reflect the general absence of type 9 and 13 combs (those known are of early forms, such as Wiberg's type E5, in which riveting is relatively conservative), while the absence of combs bearing scheme 1P (complex, highly ornate decoration, covering combs and endplates) is interesting; it seems that this style of ornament might be limited to 'Pictish' type 1c combs (see chapter 8). Scheme 1Q (asymmetrically arranged fields) is limited, as might be expected, to handled combs, while scheme 1R (no decoration) relates primarily to type 4 riveted mounts and type 8c combs. All examples of types 1a, 1b, 3, 6, 8a, and 8b are decorated. This is interesting; unornamented type 6 combs (i.e. Ambrosiani's type B4) are relatively common at Birka (Ambrosiani 1981: table 66).

As for double-sided combs, combs of type 10 were too few to provide meaningful results, but it is notable that some completely lacked connecting plate ornament, and

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<sup>6</sup> In its present form, Smirnova's chronology seems inappropriate for use in a UK context. Given the tenth century settlement date for Novgorod, type 5 combs were unimportant. Thus, she saw the use of marginal lines as a late development, and this allowed a simple division into 'horizontal' and 'vertical'

that schemes 2A-2C (i.e. those incorporating 'fields' of ornament and similar organising principles) are completely absent. One might also note that a single comb (1521; fig. 7.20) uses iron rivets in a decorative manner (scheme 2G), broadly anticipating the technique applied to combs of types 9 and 13 by over half a millennium. However, the similarity is not sufficiently close to be culturally meaningful.

Type 11 combs were absent from the sample, but type 12 was well-represented. These combs are dominated by schemes 2E (multiple motifs) and 2H (blank), while 2F (horizontal panelling) is also significant. Type 13 combs were very rare, but those present were decorated using scheme 1A, familiar from Viking Age forms 5-7, while the ornament of all type 14b combs fit into scheme 2H; most combs were completely blank, and the only decoration apparent on any examples was the use of rough incised lines above tooth edges.

As they were not recorded directly, it is not possible to consider the decorative schemes of combs from Flixborough or West Heslerton, while the Lincoln and Fishergate collections are too small and heavily fragmented to allow such an analysis. However, one may conduct a phase-by-phase analysis of the Coppergate sequence (table 7.22). Such an investigation failed to identify significant chronological variation. Though the absence of particular schemes may be chronologically significant, those schemes recorded at Coppergate are best seen as concurrent alternatives.

To summarise, the analysis of the decorative motifs, arrangements and schemes employed in comb ornament has proven worthwhile, as it has facilitated chronological and spatial analysis beyond the type level. Few precise correlations between types and motifs could be established, and variation in ornament within any given type is too great to allow schemes to be applied in the definition of types themselves. However, it can be seen that the predominance of a given scheme does vary across types. Decorative schemes might thus be said to have certain chronological and/or stylistic (cultural) associations.

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schemes). Such a dichotomy cannot be constructed for material from the British Isles. Nonetheless, certain parallels might be drawn.

## 7.5 Raw material analysis

Although identifications are necessarily qualified with the term 'probably' (see Chapters 4 and 6), and a number of combs were characterised as 'indeterminate', clear chronological and geographical variations in raw material use are nonetheless apparent. Results largely support existing beliefs regarding early medieval industry, though they do also add nuance and regional variability to the general pattern.

Types 1a, 1b, 2a, 2b, and 3 all exploit both bone and antler, as does double-sided type 12 (table 7.23)<sup>7</sup>. One example of type 12 is of cetacean bone (see fig. 7.21). It would traditionally be said to be of 'pre-Viking' form, but it was found at Coppergate in a phase 5b (late tenth- early/mid-eleventh century) context. Thus, it may represent a confluence of native stylistic tradition and Scandinavian influence in terms of increased access to the northern seas.

Type 4 riveted mounts are usually made from postcranial bone (largely split ribs), though a small number of antler examples are known. Viking Age combs (types 5, 6, and 7) are carved almost exclusively in antler, as is type 8. The use of antler in type 8b combs is particularly notable, as it has been speculated in the past that such a faceted, trapezoidal section is related to the use of postcranial bone (see Ambrosiani 1981: 23). All antler combs that could be identified to probable species were red deer, hinting at a heavy local component to manufacture. Types 9 and 13 were rarely recorded, so meaningful quantitative results cannot be produced, but it is notable that all examples were identified as antler, and of these, two combs were probably of red deer, and none were 'probably reindeer'. This raises the possibility of them being local imitations of a Scandinavian design (see below). Type 14b simple combs exploited a variety of materials, including horn and ivory, as well as bone, while 14a and 14c were only present as in small numbers, but both were represented by examples carved from ivory (fig. 7.22).

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<sup>7</sup> The effect of data from West Heslerton and Flixborough being based on secondary evidence is that the raw materials used in types 1b, 2a, 2b, 3 and 12 are frequently characterised as 'unknown' or 'indeterminate'.

In order to improve the resolution of this analysis, it is necessary to consider the data on a site-by-site basis. At Fishergate, both antler and postcranial bone were important (table 7.24), and though antler was the most common material in completed toothplates, no preference was observed in connecting plates (see Rogers 1993: 1257). At Blue Bridge Lane and Fishergate House (Ashby and Spall 2005; Ashby 2005), bone and antler were used in equal proportion in finished combs. Deposits from nearby Lead Mill Lane contain bone strips that might be seen either as pre-Viking comb blanks or Viking Age comb cases (see Riddler 1992).

In contrast, Viking Age combmakers clearly specialised in antler (table 7.25), though some regional variation is apparent, as bone seems to be unusually important at Lincoln (table 7.26). Unfortunately, further investigation is not possible, as the collections from Flixborough and West Heslerton were not studied by the author. Nonetheless, it is worth noting that the Flixborough combs are recorded as being predominantly of antler (Foreman forthcoming)<sup>8</sup>, particularly as they are of types traditionally considered 'Anglo-Saxon'. It seems unlikely that comb form was always closely tied to raw material choice, rather that large-scale changes in raw material exploitation took place irrespective of comb type (see chapter 9).

The chronological trends noted above are demonstrated more clearly in analysis of waste materials and semi-manufactures from York (table 7.27). It must be stressed that this study is based on a sample, but the patterns are nonetheless significant. Though antler dominates at Fishergate, postcranial bone nonetheless makes up an important component of the assemblage. In general, the most commonly used bone was the rib, which was frequently split in half and used for connecting plates, in a variety of forms. However, there is also evidence for the working of scapulae and longbones, while at Blue Bridge Lane there was even a discarded connecting plate blank cut from horncore. At Coppergate and Clifford Street the assemblages are much more skewed towards antler. Although Addyman has claimed that fragments of elk antler were found at York (Addyman 1984: 19), he does not make specific reference to a site. Neither is this material referred to in the specialist reports (O'Connor 1984; 1988; 1989; 1991; Bond and O'Connor 1999; MacGregor 1982; MacGregor *et al.* 1999), and it could not be traced in a survey of the collections themselves (see Appendix IV; Ashby 2006).

Several attempts have been made to use population-level characteristics of antler to investigate its possible import (see chapter 2). Unfortunately sufficient data were not available for such a study at Dorestad (Prummel 1983: 228-229), but Müller-Using (1953) looked at pairing of antler fragments at Wollin, while Reichstein (1969), Christophersen (1980b) and Hatting (1991) applied biometric techniques to the problem at Haithabu, Lund and Ribe respectively. These latter investigations have demonstrated the potential of burr size analysis. It should be noted that there are considerable problems with this approach, as the growth of antler is not well understood, and the impact of nutrition, stress and other environmental variables on antler size is unclear (see Appendix III). Nonetheless, such an analysis might prove a useful exercise in the present situation. One might expect the burr size curves for Coppergate and Fishergate to be similar if the same deer stocks were exploited in similar ways in each phase. A difference might imply the use of external sources. Thus, it is interesting to note that there is considerable disparity between the Coppergate and Fishergate samples<sup>9</sup> (see fig. 7.23). The two size distributions are clearly different, and a student's t-test shows that the difference is significant ( $t=5.05$ ,  $df=33$ ,  $\alpha < 0.05$ ).

This disparity in burr size might be due to a change in source (perhaps Coppergate represents the importation of new material from a population further afield), or may be related to more careful selection of antler for processing. Given that most of the antler is shed, however, it seems unlikely that any material discovered in the wild would be simply disregarded. Thus, we must consider the alternative possibility that there was a genuine increase in deer size over this time period. When we look at the material more carefully (fig. 7.24), and break up the Coppergate collection by phase, the pattern becomes clear (in later medieval phases some of the antlers found are of exceptional size). Thus, the difference could represent a chronological size cline, or two distinct populations. On the present evidence, it is not possible to choose between the two options.

Comparison with contemporary continental collections is difficult, as measurements were not standardised (data for Wollin, Haithabu and Ribe all relate to burr

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<sup>8</sup> We may have some confidence in these identifications, as the analyst has some experience in the analysis of bone and antler artefacts (see Foreman 1991; Foreman 1992; Drinkall and Foreman 1998).

<sup>9</sup> based on published measurements.

circumference, while English data tends to use diameter or greatest breadth; see Ulbricht 1978: Diagramm 77; Hatting 1991: 54; note that no data were available for Dorestad, Prummel 1983: 228). Moreover, raw data are rarely published, and one often has to rely on graphs rather than tables. Nonetheless, some attempt at comparison is necessary. **Figure 7.25** illustrates the data for the sites of Haithabu, Ribe, and Wollin. The modal peaks (basal circumference) for these sites are at around 215, 220, and 230mm respectively (Hatting 1991: fig. 9). If one assumes a roughly circular section, then these figures equate to diameters of approximately 68, 70, and 73mm. Given that red deer antler is usually slightly elliptical, greatest breadth figures would be perhaps a little higher. These figures lie within the range of measurements from Coppergate, making it impossible to rule out the possibility of import. Alternatively, the pattern may indicate the exploitation of increasing large deer in York's hinterland. In this case, the trend might still be taken to reflect human action, rather than pure biology, and one should consider the possibility that British stocks were carefully managed.

Where bone was used in the Viking Age, it was usually in the form of ribs, though cattle metapodials were occasionally exploited (see for instance Flaxengate, Lincoln, Mann 1982: 7-8). Split ribs were particularly important in the production of standardised, rectangular 'riveted mounts'; probably connecting plates for rudimentary combs with horn toothplates. Horn itself is not frequently preserved, though a few examples remind one that it should not be neglected (**fig. 7.26**).

Medieval material is less well represented in this survey, but working waste from Clifford Street (tenth-eleventh century, Waterman 1959), and combs from Saddler Street, Durham (Period 2, dated to the twelfth century, Carver 1979: 24), and Prudhoe Castle (from a probable 13<sup>th</sup> century context, S. Harrison *pers comm*) demonstrate that antler was still in use around and after the Conquest. Nonetheless, by the thirteenth and fourteenth centuries antler seems to have been largely phased out, and simple double-sided combs of postcranial bone would soon become the norm.

## 7.6 Method of manufacture

Some clarity has been afforded by the above analyses. However, it is possible that latent variation is present in those areas of comb manufacture not frequently studied. Analysis

of differences in techniques of comb construction could reveal patterning that relates directly to the training and experience of the combmaker, rather than to the fashions of the time, or the dictate of powerful consumers. The variables studied in such an analysis relate to method and quality (section 7.8) of manufacture.

In pre-Viking and Viking Age England, there seems to be little variation in rivet material, with combs from large and small settlements alike using iron rivets to attach billets (table 7.28). Indeed, iron rivets are almost ubiquitous in types 2-8, and dominate on small and tiny fragments of unknown type. Such conservatism is notable, and it is interesting to compare it with the evidence from Scandinavian sites. While types 10, 12, 1a, 1b, 2a, 2b, and 4 are unparalleled in Scandinavia, some observations may be made regarding types 3, 5, 6, 7, 8a, 8b, and 8c.

Type 3 handled combs are rare in Scandinavia, and it is unlikely they were ever made there. It is thus unsurprising to find that the only example recorded in this survey (from Birka) was fixed with iron rivets, as is the case in examples from both the British Isles and the Netherlands. Type 5 combs seem to be invariably fixed with iron rivets, and as their manufacture can be demonstrated at sites such as Ribe and Birka (Ambrosiani 1981), this characteristic is not helpful in the recognition of imports or other displaced examples. Type 6, however, shows more variation, being fixed with copper alloy rivets in northern Scandinavia (both Norway and Sweden) and eastern Europe (*e.g.* Ambrosiani 1981; Carlsson 2002; Smirnova 2005), while in southern Scandinavia and adjacent areas the situation is much more like that seen in the British Isles (Tempel 1969: 68-69; chapter 6 this thesis). Types 7, 8a and 8b are not recorded in any numbers in northern Scandinavia, but at Haithabu they are fixed with iron rivets, as they are in the British Isles. Type 8c represents a more complex situation, as some of Wiberg's type E3s are equivalent (see Chapter 6), but use copper alloy rivets, rather than the iron ones that typify the class in the British Isles.

One might also notice comb number 1720; an example of type 9 from York (fig. 7.9 above). Morphologically it fits into Wiberg's class E5, but is fixed with iron rivets, and thus probably represents a local imitation (in Scandinavia type 9 combs invariably utilise copper alloy rivets). Interestingly, comb 641 (from Coppergate) is a small fragment of type 13 comb, fitted with what appear to be close-set copper alloy rivets. However, XRF-analysis has demonstrated that they are in fact iron rivets coated with copper alloy

*plate*. Unfortunately, the implications of this are unclear, as knowledge of the details of rivet manufacture is insufficient both for Scandinavia and the British Isles.

This homogeneity is supported in the case studies. The collections from Fishergate (table 7.29), Coppergate (table 7.30), and the various sites in Lincoln (table 7.31), demonstrate that iron rivets were the popular choice, irrespective of time or region. There are exceptions, such as a copper alloy riveted type 6 comb of unknown provenance in York (fig. 7.27, no 1512), but such examples are best interpreted as displaced 'foreign' combs, and do not detract from the overall homogeneity. Rivet materials from the West Heslerton and Flixborough combs, though not recorded directly by the present author, were provided by the sites' excavators, and should be reliable. Taking these data into account, they corroborate the consistency apparent at the other sites. Moreover, they suggest that there was no difference in rivet materials between the combs recovered from large and small settlements.

Given the possible significance of riveting technique in this study, it seems appropriate to study as large a sample as possible. However, where only small fragments or individual toothplates are present, it is impossible to ascertain whether a single technique was applied consistently along the entire comb length. Thus, results are recorded for large fragments and complete combs only (table 7.32). It can be seen that the 'alternating edge' style dominates, while there are a number of other variants. The 'mixed' and 'other' categories require some explanation. The 'mixed' group consists of combs with an admixture of central, every edge, and alternating-edge rivets, apparently constructed with little regard for an overall scheme; it may occasionally have been considered more important to avoid disruption of ornament. Some of these unusual riveting patterns may also relate to repairs. The 'other' category consists largely of combs that are secured only at their ends, or only at the ends and centre. This technique appears to have been reserved for type 4 'riveted mounts'.

Types 2a, 2b, and 12 show some consistency in riveting practice, dominated by the 'alternating edge' technique, though the 'every edge' practice was occasionally employed. There is thus some evidence for standardisation of practice. Types 6, 7, and 8 show heavy dominance of the 'alternating edge' technique, with occasional deviant examples probably representing displaced combs.

The 'alternating edge' technique also seems to have been dominant at Hamwic and London (see Chapter 2), and it may be characteristic of England, or perhaps even the British Isles as a whole. With this in mind, it is worth putting the pattern into a wider European perspective. The technique is not well-evidenced in northern Scandinavia, though it is present at Haithabu, where the range of practices evidenced is diverse (Tempel 1969: 66-68). The 'central' technique known at Trondheim (see Chapter 2) is rare in northern England, as is the 'decorative' technique, which can be seen as a characteristic of medieval Scandinavia and areas within its cultural and economic milieu. However, the York corpus contains a number of occurrences of the 'every edge' technique that occurs across Europe, and is dominant at Trondheim. Many of these combs (such as the type 5 comb from Fishergate) may have been displaced from Scandinavia by trade or travel.

In her analysis of Novgorod - which saw a switch from 'central' to 'every edge' riveting in the eleventh century - Smirnova (2005: 29-38) suggests the existence of an east/west dichotomy, with combs from sites such as Birka and Gotland featuring the 'central' technique, and sites in Frisia and the British Isles being fixed at edges. In reality the situation was more complex than this; we have seen that both 'every edge' and 'central' techniques are apparent at Trondheim, while northern England's characteristic 'alternating edge' technique seems to be a discrete tradition (though paralleled at Haithabu, it is not so dominant there as in the British Isles, and the situation in Frisia is ambiguous). Thus, one may perceive some considerable diversity of manufacturing practice, even in combs of broadly similar form and ornament. This has important implications for the nature of the trade; although combmakers may have had contact with their counterparts in other regions, and combs themselves certainly became displaced through travel and trade, regional manufacturing traditions seem to have remained discrete, at least in the Viking Age. The result of this situation is that combs with evidence of anomalous manufacturing processes may be identified as displaced objects, and it is notable that combs displaying the 'every edge' riveting technique are concentrated in York.

These broad patterns are largely supported by the case studies. A comparison of the riveting techniques evidenced at York (tables 7.33 and 7.34) and Lincoln (table 7.35) demonstrates very little variation in manufacturing methods, either over time or

between regions. Methods used in the manufacture of the combs from Flixborough and West Heslerton could not be established in detail, but no production debris has been recovered from these sites.

Another area in which one might hope to find latent variation is in the dimensions of individual components. For example, while billet height is governed to a certain extent by comb form, billet width and thickness are probably independent of this, and may be expected to show chronological and regional variation. Thus, a survey of billet dimensions was undertaken. In order to maximise sample size, data from complete combs and manufacturing blanks were used, although in the latter case analysis was restricted to those plates for which external surfaces had already been removed. Thus, the widths and thicknesses recorded should in all cases represent the final intended dimensions of the plates.

Analysis of billet thickness demonstrated a unimodal distribution, with almost all combs in the 2-4mm range, and a clear peak at 2.50-2.99mm (fig. 7.28). If one compares the distributions from Coppergate and Fishergate, it is clear that there is a remarkable degree of similarity. Moreover, when one compares the York data with those taken from studies of the Birka and Trondheim corpora (sites separated in both space and time), the pattern remains (fig. 7.29). Given the dimensions and properties of the different materials used at these sites (red deer, reindeer and elk antler), billet thickness cannot have been determined solely by medium. Rather, the most likely explanation probably relates to the craftsman's experience, as repetition would invest one with knowledge regarding the optimum dimensions of a comb's constituent elements. The combmaker's desire to produce as many combs as possible from a given length of antler would have had to be balanced against the risk that producing excessively thin billets might lead to breakage during the tooth-cutting stage; a waste of both time and resources. Thus, the similarities of practice in Scandinavia and northern England might thus be seen as an example of manufacturing 'convergence', in which similar aims and working practices resulted in the independent achievement of comparable results.

The distribution of billet widths was a little more uneven, but a demonstrable peak is present at 15.00-19.99mm, which is again comparable to the pattern at both Trondheim and Birka (fig. 7.30). This is relevant to the comparative exercises to be undertaken later in chapter 8. Together, these analyses of billet thickness and width suggest that

there is some degree of control over billet dimensions, whether this be exerted by the combmaker, dictated by the materials themselves, or a combination of the two.

Similar homogeneity was apparent in tooth gauge, as most combs had teeth of medium coarseness (5-6 teeth per cm), and double-sided (type 12) combs tended to have undifferentiated teeth (though there is a highly decorated example that cannot be assigned to type from antiquarian excavations on Clifford Street, **fig. 7.31**). Most single-sided combs have graduated teeth (see **Appendix I**), but there is more variation in double-sided combs. Marks on connecting plates from the cutting of teeth seem variable in the Viking Age, sometimes being very deliberate and decorative, other times random or absent. Some combs bear tooth cuts along alternating halves of the connecting plate, as if the comb has been turned over during production. This might suggest that the comb was secured with a hand-held clamp - perhaps like the examples from Haithabu (Ulbricht 1978: Taf 1), Coppergate (MacGregor *et al.* 1999: fig. 953), or Pool and the Broch of Burrian in Orkney (A. Brundle pers comm.). No other variations in manufacturing techniques are apparent.

In sum, there is little evidence for change in the fundamentals of manufacturing technique between pre-Viking and Viking Age England, despite the apparent changes in choices of raw materials and overall comb form. Alternating-edge riveting is overwhelmingly common throughout northern England, and there are few examples of riveting through billet centres or alternative arrangements. The few combs examined from medieval phases showed similar construction. All in all, while fashions for form and ornament varied, at its core comb manufacture in England seems to have been rather conservative and unchanging over a period of up to 600 years.

## 7.7 Quality of manufacture

A quality score on a scale of Q1 (high quality) –Q5 (poor quality) was recorded for all combs where possible (see Chapter 4). No clear chronological patterning is visible in the quality of combs at pre-Viking and Viking Age sites in England. **Table 7.36** shows that the vast majority of combs that could be assigned a quality score fit into the 'Q3' (average) category. This is particularly so in the case of type 4 riveted mounts, which all scored Q3 or below. All examples lack decoration, and are roughly cut and assembled,

while some are rather crudely finished. Most other types feature a certain number of 'Q2' scores; type 14b is dominated by such finely cut and polished examples.

Unfortunately, it is not possible to consider quality scores for Flixborough or West Heslerton, while a comparison of the patterns seen at Fishergate and Coppergate, York is chronologically uninformative (compare tables 7.37 and 7.38). There is no evidence of any temporal patterning in quality either within, or between sites.

Neither is any regional variation apparent in a comparison of the collections from York and Lincoln (compare tables 7.37-7.39). Given the small sample from the latter, the lack of Q4 scores is difficult to interpret. Taken at face value, it may be suggestive of a relatively low output, high quality industry, but this is at odds with the number of type 4 riveeted mounts (see above), and in practice one must consider the effects of taphonomy on the diminutive corpus.

It is now appropriate to consider the qualities of combs at different sites and localities. Unfortunately the nature of the record for West Heslerton shrinks the dataset somewhat, while Flixborough's negates the investigation of quality at sites of different settlement character. Nonetheless, comparisons in terms of chronology (Coppergate and Fishergate) and region (Coppergate and Lincoln) are still possible.

Looking at the corpus as a whole, it is perhaps surprising that there is no real difference between the combs from small settlements (such as Wharram Percy and Cottam), and collections from larger market centres (such as York and Lincoln). Focusing on sites with broadly Viking Age phases, and excluding sites for which direct observation of the material was impossible (such as West Heslerton), the general distributions of quality scores are remarkably similar. One might point out a wider range of qualities at the larger sites, but this is to be expected given the differences in sample size.

If one looks at the factors taken into consideration when assigning a quality score (see Chapter 4), it becomes clear that although methods and standards of construction at larger and smaller settlements are closely comparable, standard of decoration is rarely better than 'medium' at the smaller sites. This is difficult to quantify, as it is important that one compares like with like, which necessitates the identification of comb type. This in turn requires the preservation of large fragments or complete combs, which are

few at some of the small settlements. Nonetheless, a broad comparison was undertaken, including combs of all types, and all fragments for which ornament could be assessed (table 7.40). Combs from smaller settlements frequently feature rather rudimentary ornament, often consisting of rough, knife-cut motifs, genuinely suggestive of the action of a different hand to that which worked in the larger settlements (fig. 7.32). While decoration at the larger sites (e.g. Coppergate) is frequently of a similarly low standard, high quality ornament is recorded more frequently at the larger settlements.<sup>10</sup> (fig. 7.33).

A number of blanks from supposed tenth/eleventh century pits at Clifford Street seem to have been rather absent-mindedly decorated, or perhaps used as practice pieces (fig. 7.34). Type 8a and 8b combs show some quality of ornament, though using a restricted repertoire of motifs. Type 8a ornament is generally limited to opposing obliques - interestingly mirroring the chevron patterns common in Anglo-Norman architecture (Ferne 2000: 276-7), while 8b is frequently decorated with chequerboard patterns (see above).

Fewer combs from medieval deposits were recorded, but those present are efficiently produced, if not particularly aesthetically pleasing. Type 8c combs lack ornament, but are generally quite professionally manufactured and finished. Overall, there are hints that comb manufacture was continuing its move towards functionality during the medieval period. It is more difficult to judge the quality of combs from the late Middle Ages, as most examples are small, simple double-sided type 14b, which are well-produced, with extremely fine teeth, but lacking in ornament. Concerns during this period must have been much more to do with tooth gauge and strength than with ornament or large size. It is also difficult to judge just how important a comb's robustness was, as they may well have been much more disposable items.

## 7.8 Use wear and repair

A use wear score on a scale of W0 (clearly unused) -W5 (severely worn) was recorded for all combs where possible (see Chapter 4). It is possible that beading does not

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<sup>10</sup> Though there are combs featuring 'excellent' standards of workmanship from beyond York and Lincoln, in most cases these relate to Early-Mid Saxon comb forms (e.g. type 1a, or Wharram's 'hybrid' comb). The exception is a type 6 comb from Eastgate in Beverley which, like York, might be considered an important settlement at this time.

become visible until late in a comb's life, and informal experimental work in progress suggests that this might be the case (Ashby and Glazzard *in prep.*). For this reason, handle polishing, and fine tooth striations (distinct from saw marks) visible only with a microscope, were also considered as criteria for assessing level of wear.

In practice a W0 score was reserved for unfinished combs, while scores of W1-W5 were based on a combination of tooth wear and loss, handling polish, and evidence of repair or reuse. Where it was impossible to ascertain the level of wear, an indeterminate assignation was given. Thus, in order for a comb to be included in quantitative analyses, areas capable of preserving evidence of wear (e.g. toothplates, handles etc) must remain extant, in addition to the criteria of being at least 50% complete, and being assignable to type. In practice, it often proved difficult to apply the wear scheme, given the fragmentary nature of many combs, the problems of variable beading along the length of a comb, the loss of teeth, and the taphonomic degradation of tooth surfaces.<sup>11</sup> On reflection, these problems may be a significant factor in the fact that a large number of combs were assigned a W3 wear score, as they prevented the recognition of all but the most and least worn examples. Nonetheless, the patterns produced are legitimate and of interest.

Perhaps unsurprisingly, there is little evidence of any relationship between comb form and level of wear (table 7.41; cf section 7.7). Though this quantification is confounded slightly by a number of combs of unknown type or with indeterminate wear, the general lack of patterning is nonetheless clear. One might note the high number of relatively unworn examples of type 14b. Perhaps this is suggestive of their 'disposable' nature, being discarded after relatively little use, though the fact that the majority of such combs are carved in postcranial bone and ivory (rather than antler) may have had some effect on the development of beading.

Chronological and regional variation are difficult to gauge, as data was not available for West Heselton or Flixborough, and material appropriate for wear assessment was rare at Lincoln (table 7.42) and Fishergate (table 7.43). Nonetheless, there is no evidence for differences between phases at Coppergate (table 7.44), and there is no reason to

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<sup>11</sup> It will also be noted that it was impossible to assign wear scores to type 4 riveted mounts, as teeth were in no cases present.

expect meaningful regional patterning in use wear, other than that related to differential access to combs. As it is clear that combs were being made at both Lincoln and York, this is unlikely to be an important issue.

Nonetheless, one might expect such disparities between settlements of different character, where frequency of contact with combmakers may have varied. Though quantitative comparisons between sites are impossible, a study of the corpus as a whole demonstrates little correlation between comb wear and sites of different character. Indeed, if one overlooks the many semi-manufactures present at sites such as Coppergate, there is parity between large and small settlements.

## 7.9 Manufacturing evidence

It has been shown that the organisation of combmaking was regionally and locally variable (Chapter 2; Ashby 2006). It may therefore be useful to compare the manufacturing evidence from the study's two large settlements, Lincoln and York. Bone and antler-working waste is ubiquitous in both settlements (see figs 7.35 and 7.36), which is broadly consistent with Ambrosiani's thesis (that combmakers were itinerant, and rarely returned to the same working premises). However, one must consider the alternative: that the combmaking community was larger and more diverse than one might imagine (though the centrality of certain skilled artisans seems assured). In order to further elucidate the character of combmaking in each settlement, the nature and distributions of manufacturing debris are considered below.

There are clearly disparities between the two centres in terms of raw material use. Not only is bone disproportionately important at Flaxengate, but antlers tend to be small (though unmeasurable), perhaps suggesting local rather than imported, or 'wild' rather than 'managed' stocks. Dobney *et al.* (1996: 50) have tentatively taken the extremely small quantities of red deer postcranial material in all phases at Lincoln as an indication of a relatively sparsely forested immediate hinterland. While one might question this supposition, it is notable that much of the antler from Flaxengate was taken from butchered deer (O'Connor 1982: 40).

Overall, raw materials were less dominated by shed red deer antler than was the case at York. One might suggest that this is indicative of a less structured supply network. Perring (1981: 42-43) has further argued that the small scale of manufacture at Flaxengate, coupled with the fact that waste was not consistently concentrated in particular buildings, is symptomatic of a cottage industry conducted from 'otherwise domestic buildings'. However, it should be noted that this antler-working is not easy to connect with combmaking, given that secure contexts have proven elusive (see Mann 1982: 1-2), and a number of other forms of objects were recovered unfinished (Perring 1981: 42-43).

In York too, not all bone and antler waste can be shown to relate to combmaking. If, however, one accepts Arthur MacGregor's (1989; 1991) argument that the Viking Age was characterised by a specialism in materials rather than products (so that it is more satisfactory to speak of an 'antler-worker' than a 'combmaker'), then it must follow that many waste deposits (particularly those with a high antler : bone ratio) relate, at least in part, to the manufacture of combs.<sup>12</sup> In order to approach this question more fully, a study of the distribution of working waste is essential.

It is thus useful to consider the distributions of waste around each settlement. In Lincoln, antler-working waste is widely dispersed (fig. 7.36), suggesting the existence of short-term/temporary workshops, used either by itinerant craftsmen or home-based non-specialists. The situation is similar in Viking Age York, and here the waste deposits are both more numerous and more substantial. Table 7.45 details the sites for which such evidence has been recorded (taken from Mainman and Rogers 2004), and figures 7.37 - 7.38 map them onto the topography of York. It can be seen that the distribution extends away from what one may think of as the primary market centres of York, into more 'residential' and perhaps less-densely populated areas. From Mainman and Rogers' (2004) maps, it can be seen that bone-/antler-working is among the most well-represented and widely distributed crafts in Viking Age York, with a wider distribution than iron or non-ferrous metalworking, woodworking, amber or jet-working, leatherworking, and glass-working. Indeed, the only comparable craft is textile working;

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<sup>12</sup> Notably, the disposal of antler pedicle at York contrasts with the situation at sites such as Haithabu, where extensive use is made of the pedicle in the manufacture of small objects such as gaming pieces and dice (MacGregor *et al.* 1999: 1909; cf Ulbricht 1978: 55). One might suggest that the York situation is indicative of greater specialism in a single object: combs.

itself an activity that is accepted as having been household-based in many cases (Walton Rogers 1997: 1824-1825).

It is worth considering how many of these sites might represent combmaking. Other than the deposits at Leadmill Lane (which contain blanks for composite combs or cases and may date to any period between the eighth and tenth centuries), all of the tabulated collections contain antler offcuts. This is also the case for all of the Lincoln sites in **fig. 7.36**. One might assume that wild deer antler was a less accessible resource than postcranial bone from domestic mammals (see Chapter 2), and was thus used for particular, proscribed purposes. Indeed, in MacGregor's (1999) catalogue of finds from York, few objects other than combs seem to have been consistently manufactured in antler (rather than bone). There is diversity in these objects – they include amulets, strapends, rings, beads, pins, casket mounts, spindle whorls, pin beaters, handles, gaming pieces, dice, miscellaneous points and tools – but most are poorly represented, and could perhaps be seen as the by-products of combmaking. The only other well-represented antler finds are worked or decorated tines, and it seems inconceivable that people went to the effort of acquiring antlers for the sole purpose of making such objects.

Nonetheless, if one assumes for now that not all of this bone/antler craft was related to combmaking, then what was its context? Many of the tools associated with textile manufacture were rudimentary bone or antler objects, and it seems possible that weavers made some of their own tools. With this in mind, it may be informative to compare the coincidence of textile manufacture and bone-working, and once again the best evidence comes from York (**fig. 7.38; cf table 7.27**). It can be seen that only nineteen of the seventy-five bone/antler-working sites also evidence textile manufacture, and at several of these sites the latter is identified on the basis of small numbers of bone weaving tools that could conceivably be taken simply to indicate bone/antler-working. Moreover, beyond the central market area (Parliament-Pavement-Picadilly-Coppergate-Clifford Street area), other than in Bishophill, there is little concordance between bone/antler-working and textile manufacture.

In that central area, the coincidence probably simply relates to the concentration of multiple industries operating in close proximity to one another. The external areas are

more telling. Had there been a similarity in the distributions of evidence for bone-working and textile manufacture, one might have posited a relationship between the two activities, and suggested that a significant amount of rudimentary bone-working was undertaken by weavers. While this may have taken place on an ad hoc basis, the evidence fails to demonstrate any close relationship between the two crafts.

Furthermore, given the frequent exploitation of antler at these sites, one might suggest that most of them represent combmaking. Thus, combmaking may well have been taking place within individual households, or on a *locally* peripatetic basis (the evidence of regional patterning in types and riveting practices negates the assertion of itinerancy on any larger scale).

A consideration of comb quality from around York would be helpful (see above), as disparities between the central and peripheral areas might help to demonstrate the activities of skilled and less-skilled workers. However, in order to give an accurate representation of quality patterning, and to compare like-with-like (e.g. type 7 with type 7), large fragments and complete combs are required, and these tend to be very largely restricted to the central areas. This is surely reflective of both survival rates and the large numbers of combs produced at sites like Coppergate, but may also relate to density of settlement and the purchasing power of the population in that area.

Nonetheless, even if a certain number of combs were being made on a small scale at a large number of localities, it cannot be denied that certain central sites present evidence for intensive, professional manufacture. The best case study is Coppergate. Here, waste material from the manufacture of combs and beads can be reasonably associated with particular building plots. In period 4B (mid-tenth century) antler waste was dumped at the street frontage and the yards to the rear of at least two tenements (B and C), so it seems likely that the craft itself was carried out in the associated wattle-walled buildings. In period 5B (late-tenth-early/mid-eleventh century) there are particularly large deposits on tenement C, and these appear to be concentrated around a succession of structures (MacGregor *et al.* 1999: 1920-21; Mainman and Rogers 2004: 478).

The authors (MacGregor and Mainman 1999: 1922) were cautious not to over-interpret what they saw as a relatively small quantity of combs and waste. Nonetheless, this should not be taken as justification for following the scholastic orthodoxy (that is that

the deposits are too small to be the result of settled artisans, and must instead result from the work of itinerant craftsmen, see Chapters 2 and 9).

## 7.10 Summary

This analysis has ranged widely, and it may be prudent to review the findings at this stage. The main results can be summarised thus:

- Bone was used in addition to antler in the pre-Viking period, but by the tenth century the former was utilised for little but type 4 riveted mounts. There is no evidence of the use of foreign species, but at York there is a significant and continual increase in the size of antler used from the tenth century onward.
- There is some evidence for regional variation in the popularity of the various comb forms. Evidence is ambiguous, but local forms may have persisted at small settlements such as Flixborough. The uptake of Scandinavian comb forms was not immediate either here, or in ninth century contexts at Fishergate.
- Certain decorative motifs, arrangements, and schemes are chronologically distinctive; thus 'pre-Viking' ornament was phased out and replaced on the combs of the tenth and eleventh centuries.
- There is no sign of variation in manufacturing methods either through time, between regions, or at different types of site within the study area.
- There is broad parity in comb quality across regions and between sites of different character, though quality of ornament is perhaps higher at large market centres than at smaller settlements.
- Use wear analysis suggests that until the advent of type 14b combs in the later Middle Ages, there was little change in patterns of comb use or curation.
- Bone-/antler-working (and arguably comb-making) evidence is widely dispersed within towns such as York and Lincoln.

Other differences between settlements of differing size and character are worthy of consideration. Type 4 riveted mounts are notable in their absence from smaller settlements (barring possible examples at Flixborough; Foreman forthcoming), adding further support for the concept that they are the remains of utilitarian combs produced in relatively high numbers for the 'urban' market.

A particularly interesting trend is the apparent persistence of types 2a, 2b and 12 into ostensibly Viking Age levels (together with the absence of types 5, 6 and 7) at small sites such as Flixborough, Wharram and Cottam. The reasons for such a difference in the degree of stylistic conservatism between large market centres and smaller settlements are worthy of investigation.

In sum, this case study has demonstrated the existence of variation in comb form, ornament, and manufacture on three dimensions; time, space, and settlement type. Such variation is socially meaningful, and may relate to the expression of identity through style.

The first dimension of variation is time. The survey has demonstrated consistent chronological trends in comb form and ornament, but methods of manufacture and use wear are more conservative. However, the 'tipping points' at which one comb form is replaced by another cannot be tightly dated, and though residuality may be partially to blame for this, it probably also relates in part to the slow uptake of new designs, and long periods of concurrency of forms. Thus, the association of comb types with 'Anglians' or 'Scandinavians' is often impossible, and although contact with peoples from overseas surely had a key role in establishing new comb types in northern England, a number of economic and political factors were also likely to have been important (see Chapter 9).

The second dimension of variation is space. In particular, this survey has used the combs from Lincoln and York to highlight regional variability. Viking Age York and Lincoln may be seen as broadly contemporary, though there are dating problems at both (see Mann 1982: 1; MacGregor et al. 1999: 1881), and the late-ninth century origins of the Flaxengate settlement probably accounts for the presence of zoomorphic ornament not known from York (fig. 7.39). Other disparities in type frequencies are difficult to interpret given the sample size differences.

However, there is an interesting difference in raw material exploitation; while red deer antler is almost ubiquitous at York, at Lincoln (and Flaxengate in particular), there is a curious use of postcranial bone in toothplates. This disparity may relate to local variations in the organisation of access to raw materials. Notwithstanding these

differences, manufacturing methods are very similar, and standards comparable, while, as might be expected, there are no significant differences in levels of use wear.

Comparisons between settlements of differing size and character may largely be interpreted in terms of differential access to combs. The present author knows of no evidence of combmaking in England beyond large settlements such as York, Lincoln, Northampton, Thetford, and Hamwic. Nonetheless, the conservatism and relatively low standards of ornament apparent in combs from sites such as Flixborough suggest that their owners patronised a market other than Lincoln or York.

These patterns have utility in the understanding of the construction of identity in pre-Viking, Viking Age, and medieval northern England. The choices made by the 'consumers' of combs were influenced by their own concepts of ethnicity and status, and by access to markets. All of these factors may have varied depending upon temporal, regional, and political context. As such, combs may be informative as to culture contact, politics and economy in northern England between AD 700 and 1400, and this will be discussed in Chapter 9.

## Chapter 8: The Use of Combs in Scotland

### 8.1 Introduction

In this chapter, the results of the Scottish study will be outlined, such that they may be compared with northern England (Chapter 7), and other regions (Chapter 6). It should first be stated that the sample size for Scottish combs is much smaller than that for England. That said, it is certainly of sufficient size (600 records in total) to produce meaningful results, and given that the sample may be readily subdivided into regions, there is perhaps greater potential for the study of spatial variation.

### 8.2 The sites

Large settlements of the character seen in England are not known in Atlantic Scotland before the medieval period, so 'large' / 'small' comparisons (as were carried out for Lincoln and York) are not possible herein. Rather, the value of the Scottish assemblage lies in the collation of material from a large number of sites (61 secure findspots<sup>1</sup>; table 8.1; fig. 8.1). Thus, two large collections are compared, one from western Scotland, and one from northern Scotland.

Nevertheless, well-excavated sequences remain fundamental to the chronological framework of the analysis. Key sequences come from Bornish and Kilpheder (South Uist) in the west, and Pool (Sanday), and Quoygrew (Westray) in the north (fig. 8.2). Other sites provide useful dated contexts for individual combs (table 8.2). Where possible, material was studied in person, but in some cases only partial collections were available. This was the case for Pool and Freswick Links. In these cases, that which was directly observed was fully recorded in the database, while basic details for the remainder of the material (not including raw materials, quality of manufacture or use wear) was added to the database using published (Batey 1987) and unpublished (Smith *forthcoming-a*) sources. A small collection from Bostadh (see Smith *forthcoming-b*), and a more substantial corpus from the Udal, were not recorded in this survey, but are referred to in passing.

### 8.3 Typology, dating and spatial variation

Having established the sites that provide meaningful data with which to build a chronology, the next step is to ascertain the chronological relationships of the artefacts with secure positions within these site sequences. Without this foundation it is impossible to convincingly assess variation in any other dimension. Herein, chronological analysis is undertaken through the discussion of the few combs with known, secure contexts, and developed upon and expanded through the use of correspondence analysis.

Table 8.3 shows the relative frequencies of comb types in Scotland, while tables 8.4 and 8.5 break down the distribution by region, and provide details for some of the key sites. Double-sided types 11 and 12 are particularly well represented. High-backed type 1c combs are less common than the Viking Age type 5 combs, but other 'Norse' forms (6 and 7) are poorly represented<sup>2</sup>. It is generally accepted that type 1c (high-backed single-sided) combs are of Pictish or at least broadly 'Celtic' origin (that is insular, and relating to the current territories of Ireland and Scotland), first gaining currency in the seventh century or earlier (see Chapter 5). This is based partially on associated artefacts and partially on their presence on Class I symbol stones, but it is notable that they are known from the later phases at Buckquoy, and in the Lower Norse Horizon at the Brough of Birsay, where they are in generally good condition. Thus, one might propose a somewhat longer period of currency than has previously been assumed. Late Viking Age and medieval types 8, 9 and 13 are well-represented, while type 14b is rare.

First, it is appropriate to review the associations of type 11 and 12 combs. To briefly recap Chapter 6, Curle (1982) divided double-sided combs with undifferentiated teeth into Types *A* and *B*; equating respectively with types 11 and 12 as used in the present study. Type 11 is thought to date from the Late Iron Age, and may be contemporary with type 1c (single-sided high-backed combs). Given their apparent absence in Scandinavia itself, Curle also argues that Type B (12) combs are 'native', though at Birsay most derive from the so-called 'Lower Norse Horizon'. Although Curle's

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<sup>1</sup> A small number of combs have less secure provenances such as 'North Uist', 'Orkney', or 'Scotland'.

<sup>2</sup> This is not simply a problem of distinguishing types 6 and 7 in fragmentary material; There were very few 'small/tiny' fragments that could be assigned to either types 6 or 7.

assertions have been implicitly accepted by a number of workers (*e.g.* Weber 1992; Ballin Smith 1995), they should not be received uncritically. As discussed in Chapter 3 (see also Barth 1969; Weissner 1983), given the manner in which identity is created and manipulated in periods of culture contact, the presence of 'pre-Viking' material culture in early 'Norse' contexts is to be expected, but in the past the situation has been considered rather naively.

It will be recalled that the key site in the debate, the Brough of Birsay, suffers from poor stratigraphic integrity, and it is not possible to argue in favour of either case from this site in isolation. Nevertheless, an analysis of fragmentation may allow one to determine whether 'native' combs in the Lower Norse Horizon levels are *in situ* or residual. The presence of seven largely complete type 1c, 11, or 12 combs is of note, but the high proportion of 'tiny' fragments does imply some residuality (table 8.6).

Given the stratigraphic problems at the Brough of Birsay, a systematic study of the type 11 and 12 combs from Scotland is required. Three issues are of interest; whether type 11 or type 12 combs appeared first, whether they were later to become contemporary with one another, and whether either form persisted into the Viking Age. The key piece of evidence relating to the first question concerns carvings on Pictish symbol stones (renderings of type 11 combs occur on Class I stones, and type 12 on Class II) (fig. 8.3; Foster 1990: 162-165). Class I stones are rough, undressed, and adorned with 'Pictish symbols', while Class II are dressed, finely finished sculptures that incorporate Christian iconography alongside these symbols. There is little consensus regarding their dates, and the key lines of argument on this issue relate to parallels with metalwork and manuscript art. Nonetheless, classes I and II might be broadly dated to the fifth to seventh and eighth centuries respectively (Foster 1990: 162-163). Smith (2000: 181) argues for an early (fourth to fifth century) date for Class I, on the basis of her identification of certain combs inscribed on Class I stones as 'barred zoomorphic' forms (part of type 1b herein).

Both this evidence, and the original art historical parallels, can only be considered circumstantial at best, though they are consistent with type 11 predating type 12. In order to corroborate this assertion, and to address questions pertaining to their

contemporaneity and persistence, it is necessary to concentrate on the archaeological evidence. This is attempted in the following, insofar as the evidence will allow.

Given their close similarity in terms of form, ornament, and chronology, one must consider the possibility that Scottish type 12 combs developed either from their Anglo-Saxon equivalents, or in parallel with them, from some common ancestor.

Correspondence analysis helped in distinguishing regional variants (fig. 8.4; table 8.7).

The key difference between the two regions seems to be the close association of decorative scheme 2D (multiple lines of motifs) with England, compared with Scotland's more diverse array of schemes.

In all, it can be seen that although there is clearly heterogeneity of design, the combs form a continuum, rather than two discrete clusters, and that in the centre of the curve, all combs are closely packed together. Thus, it may be said that although the groups diverge in terms of ornament, they probably stem from the same 'ancestral' form. The direction of movement is difficult to ascertain, given the lack of chronological resolution, and the means by which the template was spread is also difficult to grasp. It may relate to contact between the churches of Pictland and Northumbria in the seventh and eighth centuries, but it is interesting that only type 12 seems to have been adopted, rather than types 2a, 2b, and 3.

Focusing on Scotland now, it is germane to consider any chronological or spatial patterning within the region. The sites of interest are well-known, and their collections have been subjected to analysis and interpretation on several occasions. Following Sally Foster's (1990) work, Rachel Edwards (1997) studied the occurrences of type 11 and 12 combs in sites in the Northern Isles. It is appropriate to briefly review Edwards's work, and to augment or contrast her evidence with new, well-stratified examples from recent excavations. In general, she found that double-sided iron-riveted combs tended to be found in relatively early levels. At Saevar Howe (Hedges 1983), though the site straddles the Pictish-Norse transition, and despite a significant corpus of comb fragments, the only stratified type 12 combs came from a 'Pictish' level (Phase Ib). Coin evidence suggests that this pre-dates the ninth century. At the Howe, one type 11 and one type 12 comb were found together in a Late Phase 8 context (Ballin Smith 1994: 177), but their precise provenance is ambiguous, and disparity between stratigraphy and

radiocarbon-dating is suggestive of disturbance (Carter 1994: 265). Nonetheless, the date for this context might just as easily be ninth-century as seventh or eighth (see Chapter 6). Also ambiguous are type 12 combs from the Broch of Burrian (MacGregor 1975b) on North Ronaldsay. These might be seen to reinforce the idea that the type is of pre-Viking origin, but Edwards (1997: 76) argues that in the absence of evidence for Norse activity there is no reason why this school of manufacture couldn't have continued into the ninth century. Moreover, even if these examples do date to the seventh or eighth centuries, I would argue that the general form could nonetheless have remained current into the ninth. This remains to be demonstrated, of course. Perhaps stronger support for a late (perhaps ninth century) date comes from Skail, where only a single fragment of a type 12 comb is known from the Iron Age Site 6, and this is in the upper levels of the site. In contrast, such combs are fairly common in the lowest levels at the Late Iron Age to Viking Age Site 2.

Type 11 combs appear to be absent throughout the Skail sequence. If type 11 was the genuine precursor of type 12, then one might expect to see examples in the earlier phases at Site 6, but instead, these layers contain only long-handled combs. Unfortunately, the Skail stratigraphy is imprecise, and arguing from this evidence takes us little further than do the examples provided by the Broch of Birsay, Broch of Burrian, and the Howe. It would be more satisfactory to ground any argument in secure sequences, where the co-occurrence of types 11 and 12 in a given deposit or site phase would provide a more compelling demonstration of their contemporaneity. No such situations can be verified. One might note reports that double-sided endplate fragments with both graduated and ungraduated teeth were recovered from phase 6.7 (broadly dateable to between the seventh and ninth centuries; see table 8.2) at Pool (Smith 1998b: 157; Smith *forthcoming-a*), but they may not be reliably identified to type. Pool is most important as it provides the only recently excavated sequence in which double-sided, iron-riveted combs co-occur with later, 'Scandinavian' forms. Fragments of types 11/12 and 5 have been recovered from period 7.1 and 7.2, the 'interface' period dated to the ninth and tenth centuries (Hunter *et al.* 1993: 277). An understanding of the nature of this association awaits full publication of the site.

The broch site of Scalloway, Shetland has a fairly tight chronology, provided by a number of radiocarbon-dates. Here, a double-sided toothplate fragment, and a

complete type 11 comb (figure 8.5) were recovered. They were found in stratigraphic block 6.2 (the remains of one of the houses in the external settlement), which was dated to AD 650-880 (Sharples 1998: 84; see table 8.2). The sequence relates to a pile of stone-robbing debris outside the broch, but the completion and good preservation of the comb militate against the possibility of the comb having been reworked, particularly amongst such heavy rubble. Thus, this comb could conceivably date as late as the Viking Age. Although it is recorded in the report as a type 11/12 'hybrid', its length : height ratio, faceted connecting plates, and style of decoration all situate it within the type 11 category. At the same site, a type 12 fragment comes from a ditch-fill in block 5.2, which was radiocarbon-dated to AD 660-960 (calibrated at  $2\sigma$ ); also conceivably Viking Age. Thus, it seems that types 11 and 12 may have been contemporary and could have continued in use into the ninth-century, though of course the dates involve considerable uncertainty.

It is also important that finds from the Western Isles and mainland Scotland are considered. For example, at Castle Park, Dunbar there is one type 11 and several less diagnostic fragments of double-sided combs. Unfortunately, however, all are residual in fourteenth to sixteenth-century contexts (Perry 2000: 145-149). A type 11 comb is also known from a probable eighth-century context at the site of Bornish, South Uist (fig. 8.6; N. Sharples *pers comm.*), while at Bostadh there are five relatively complete type 12 combs (unrecorded in the survey), and a number of less diagnostic double-sided comb fragments. The large fragments and complete combs come from contexts in House 1, Cell K, and House 3, Cell L (both cellular, architecturally 'Pre-Norse' buildings). Given the absence of absolute dates, it is inadvisable to attempt to date the sequence more precisely; to use artefactual or architectural evidence to do so would be to enter a circular argument.

At Buiston crannog, three type 11 combs come from contexts dated to the seventh century (see Chapter 6). Combs of the same type from Dunadd are not well dated, but their presence is consistent with a Late Iron Age date (Foster 1990: 162). Though many more type 11 and 12 combs are known from Scotland (in total there are eighteen and twenty-one 'large/complete' examples respectively) none are well dated. Overall, it can be seen that many of the Late Iron Age/Viking Age sites with large numbers of combs lack good stratigraphy (*e.g.* the Broch of Burrian; the Brough of Birsay; Skail, Deerness).

Moreover, at others the material is highly fragmented, and difficult to assign to type (e.g. Old Scatness; Pool). It is therefore key to focus on the few sites at which both comb type and provenance are secure. The relevant examples are shown in **Table 8.8**.

The type 12 combs from Bostadh can surely be said to be of Iron Age date, but in the absence of absolute dating, any greater level of precision is not possible. A single example of type 11 from Bornish comes from a probable eighth-century context. At Howe, though dating for the upper layers is imprecise, the sequence itself is reasonably secure, and it is notable that of three largely complete double-sided combs, the type 11 lay stratigraphically above the type 12 examples (Ballin Smith 1994: 177).

At Buckquoy, nine complete or fragmentary double-sided, iron-riveted, combs were found in phases IV and V, both predating the mid-tenth century grave (Ritchie 1977; Brundle *et al.* 2003). Of these, two are confidently identifiable as type 12. The only clear example of type 11 comes from phase I. However, this does not constitute evidence for a chronological replacement of type 11 with type 12, and one should note that none of Buckquoy's 'pre-grave' phases are directly datable in absolute terms.

Indeed, evidence for such a development is lacking from Atlantic Scotland in general. Correspondence analysis did not find the seriation necessary to demonstrate such a relationship; instead a marked separation between the types was evident (Chapter 6, **fig. 8.7**). Type 11 and 12 combs may thus represent different regional traditions, and **Figure 8.8** shows their distributions in Atlantic Scotland. Following Ockham's Razor, it seems that the primary reason for the use of these two distinctive types of comb is a geographical disparity; type 11 has its origin in the Irish Sea region, perhaps even in Ireland itself (it will be recalled that type 11 dominates there; see Chapter 6), while type 12 is much more common in northern Scotland. The nature of the latter's relationship with the type 12 combs common in contemporary England, is yet to be determined.

It should also be noted, however, that the distributions of types 11 and 12 are not mutually exclusive. Type 12s are found in western Scotland, (note that five examples from Bostadh have not been recorded in this project), and there are a number of type 11s from Orkney (at Buckquoy and the Brough of Birsay, for instance). These outlying

combs represent links between the Northern Isles, Western Isles, and the Irish Sea region.

To summarise, the situation presently stands as follows: firstly, Pictish symbol stones may imply that type 11 combs were current in Scotland by the mid-1<sup>st</sup> millennium AD. This is consistent with the probable date of finds such as Buiston Crannog (although this example lies outside 'Pictland'). They then continued in use probably until just before or early in the Viking Age. Secondly, type 12 combs were in use prior to the Viking Age, at sites such as Howe. Their currency thus overlapped with type 11, as did their geographical distribution. Type 12 combs are likely to have continued in use into the early decades of the Viking Age based on sites such as Buckquoy (and the Brough of Birsay), but absolute chronology is lacking. Most importantly, type 11 or type 12 combs have rarely been found together with early Viking Age forms (type 5) in well-stratified contexts, and the degree of chronological overlap thus remains ambiguous. Pool, the only site at which this relationship is well documented, is yet to reach full publication.

As is consistent with their perceived Anglo-Saxon or Frisian origins, types 1a, 2a, and 2b were not recorded in the Scottish sample or literature. Like types 11 and 12, type 1c combs have traditionally been seen as an Iron Age form (see MacGregor 1985: 87-88), given their presence at 'typical' Iron Age sites such as the Broch of Borwick (Watt 1882) and Langskaill, Orkney (Moore and Wilson 2005), though many sites lack stratigraphy.

The origins of type 1c are somewhat elusive, as they have parallels in both type 1a and 1b. Andrea Smith (2000) argues for their having developed in Scotland, out of examples of type 1b acquired by means of gift exchange. Smith's argument is initially convincing, but is based on indirect evidence. Type 1b combs have never been found in Scotland, and her proposed fragmentary examples are not persuasive (Smith 2000: 184-185). However, she proposes that these combs are depicted on Class I symbol stones (fig. 8.9). Though some examples are unconvincing (1,8 and A), others (5,6, and B) do seem to be fairly accurate representations of the type. The case thus remains unproven.

It is, however, worth considering the alternative. Though some examples of type 1b and 1c do certainly share similarities (their high, ornate backs in particular), there are

also significant differences (such as the use of three or four connecting plates in type 1b, and only two in 1c). The explanation may well be that they developed along divergent lines from a shared Roman ancestor (1a). It may be appropriate to see 1b as an Anglo-Saxon and Frisian template, while 1c arrived in northern Scotland - perhaps fully-formed - after development in Ireland and the Irish Sea region (see Chapter 6). The validity of this model may be assessed through the study of combs from well-dated contexts.

Unfortunately, there are no examples of type 1c combs from contexts that may be securely dated to the Middle Iron Age (see Foster 1990: 161), so their earliest date remains elusive. Smith (2000: 185) suggests that they be dated to the fifth and sixth centuries, but there are a number from probable - if insecure - Late Iron Age contexts (*e.g.* Young 1956 ; MacGregor 1975b; Hedges 1983; Buteux 1997). Recent excavations at Bostadh recovered a good example from House 1, Cell K (a cellular, architecturally 'Pre-Norse' building), but this site lacks an absolute chronology, and a precise date remains elusive. Nonetheless, the possibility of a later or extended currency cannot be excluded, particularly as Curle (1982: 22) noted the persistence of type 1c into the 'Lower Norse Horizon' at the Brough of Birsay, and Ritchie (1977: 194-196) found two complete type 1c combs and a number of fragments in the 'Norse' phases IV and V at Buckquoy. The lack of absolute dating in both cases has been addressed above, however.

Demonstrably ninth-century settlement sites are not common in Scotland, limiting the collections one might use to test continuity. At Jarlshof, type 1c combs are not known (see Hamilton 1956). At Skail, type 1c combs were absent at site 6, perhaps suggesting that they were not common in the period between AD 200 and 600. However, though they were found at Site 2, this was only in the earliest levels (Midden 3, and unstratified contexts relating to House 1 and House 2) (Edwards 1997: 76). Unfortunately, dating for these phases is reliant on the combs themselves, and draws heavily on the Brough of Birsay for parallels, so is of little use (Edwards 1997: 76). The structures are rectilinear in morphology, and interpreted as Norse. From more recent excavations, the only definitive type 1c comb known to the author comes from Pool, but this was unstratified. A possible fragment comes from a Mound 2 context at Bornish, in which it is certainly residual.

To synthesise, the earliest possible date for type 1c combs is probably the late fifth century (Smith 2000: 185), but this is not archaeologically well attested, and we lack good evidence with which to investigate its longevity. It does not seem to be as widespread or popular as type 12, and certainly did not persist for long into the Viking Age. None co-occur with securely stratified Viking Age types (*e.g.* 5 or 6).

Types 3 and 4 seem to be entirely absent from the Scottish corpus, but the chronology of most later comb types seems fairly secure, at least in broad terms. As discussed in Chapter 5, Ambrosiani (1981) has established a progression from A-combs to B-combs (herein classified as types 5 and 6 respectively) in Scandinavia. She placed the use of A-combs between sometime prior to AD 800 and 950, with B-combs overlapping slightly, being current from c.AD 900 until perhaps after 1000. This seems to hold true elsewhere in the Scandinavian sphere of contact (*e.g.* Smirnova 2002), although of course time-lag effects may exist. Nonetheless, some further investigation into dating would be worthwhile, but the lack of clear stratigraphy for many Viking Age sites in Northern Scotland confounds this.

In general terms, the frequency of type 5 combs in northern and western Scotland is notable, given their virtual absence in northern England. This disparity is a concomitant of the general difference in date between excavated 'Viking' sites in England and Scotland; while ninth-century furnished graves and (to a lesser degree) settlements are not uncommon in the north, in the Danelaw tenth and eleventh-century Anglo-Scandinavian settlements (*e.g.* Coppergate, York) have been the subject of most interventions. In Scotland, they are known from both settlement and burial contexts (tables 8.9 and 8.10)

Most examples of securely stratified type 5 combs from Scotland are from graves (table 8.11). These can be dated to the period between the mid-ninth and mid-tenth century (Graham-Campbell and Batey 1998: 154; Barrett *et al.* 2000b: 10). Undisputed examples of type 5, fitting the classic Ambrosiani 'A' template, are known from Scar (two examples) and Westness (three examples). Poorly preserved remains from Balnakiel and Lyking also seem to reflect this type, and drawings from the cemetery at Pierowall also clearly indicate the form (see Graham-Campbell and Batey: fig. 7.9), while an example

from the Brough Road, Birsay clearly fits into type 5, though is not a classic Ambrosiani 'A' type (see Batey 1989: Illus 154).

These presumed mid-ninth to mid-tenth-century grave finds are consistent with the date for type 5 combs from Scandinavia. A fragmented type 5 comb recovered from St. Andrew's churchyard in North Berwick may well also relate to a pagan burial. It was not associated with human remains from the much later churchyard, but as it was discovered during road widening, its context is unclear (Hall and Bowler 1997: 665). This site is something of a geographical outlier, though 'Norse' activity is evidenced in the area; a reused hogback stone is known from the churchyard at nearby Edrom (Richardson 1907: 434-435), while type 5 combs have also been recovered from Castle Park, Dunbar (see below).

In detail, there are two examples (only one of which has been recorded in the present corpus) from pits and ditchfills at Castle Park (Cox 2000: 145-149). Though one of these combs is residual in a medieval deposit, the other comes from Perry's (2000: 71-77) 'Northumbrian' (ninth century) period. Further north, no type 5s are known from Buckquoy, but there are four stratified type 5 combs at Pool, including 'tiny' fragments intrusive in period 6.1 (probably c. fifth century) and (presumably) residual in period 7.2 (tenth century). 'Large/complete' examples were recovered from periods 8.1 and 8.2.1 (eleventh to twelfth century; J. Hunter *pers comm.*). There is also one example from Saevar Howe in a phase coin-dated to AD 852-874<sup>3</sup> (Hedges 1983: 93), and a possible type 5 from the 'final phase 3' rubble overlying the broch at Scalloway (block 7.1, dated by Sharples to the tenth century, and accompanied by a case from another comb, and steatite weight) (Smith 1998: 156-157). In the west, there is a type 5 from phase 3 (early eleventh century) at Kilpheder, and there are three fragments from Mounds 2 and 2A (occupied from the eleventh century) at Bornish, and one fragment which has been reworked into a pendant from a Mound 2 context. The latter is not useful as a chronological indicator as it could have reached Bornish at any point prior to that date, and may even have been reworked before it reached the Hebrides. These examples could indicate long-term curation of type 5 combs in Atlantic Scotland. However, the highly fragmented state of most suggests that they instead represent residual finds from earlier contexts.

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<sup>3</sup> Hedges (Hedges 1983: 93) identifies the coin's moneyer, and thus dates it to the period AD 866-868.

Turning to essentially undated finds from settlement deposits, the largest collection comes from Jarlshof, where four large/complete type 5 combs and seven small/tiny fragments were recovered from the earliest phases of Hamilton's (1956) 'Viking and Later Norse Settlement'. In Orkney, there is a single example from a midden at Site 2, Skail (Deerness), two from the Brough of Birsay, and one with an imprecise 'Orkney' provenance. There are also a number of poorly dated type 5 combs from the Western Isles. It is not included in the present survey, but a single type 5 comb was also found in the short-lived longhouse at Drimore Machair on South Uist (MacLaren 1974), while the Museum of Scotland holds two type 5 combs with a broad 'North Uist' provenance.

The Brough of Birsay sequence could be read to suggest that type 5, type 1c, and type 12 combs shared a period of concurrency in the ninth century. However, this cannot be demonstrated from more secure sites, as noted above. This may be partially a symptom of the small quantity of ninth century sites with large comb collections, but it nonetheless demands caution in interpretation. At Skail, Deerness, the types are not found in the same houses or middens, with combs of types 1c and 12 being found in layers stratigraphically below those in which types 5 and 6 were found (Porter 1997: 96-97). At Saevar Howe (Batey and Morris 1983: 86-88), barring one example from Farrer's original nineteenth-century excavations, stratified examples of type 12 were confined to Phase I ('Pre-Norse'), while type 5 was only found in phase II ('Norse'). Unfortunately, all combs and fragments identifiable as type 1c were either excavated by Farrer, or later recovered from his spoil. Hamilton (1956) does not record combs of types 11, 12, or 1c, and in any case combs from 'Early Viking' levels are all of type 5.

Type 6 and 7 'Viking Age' combs are relatively uncommon in Scotland; type 7 is particularly so (see table 8.3). Both are restricted to the upper levels at Site 2, Skail (Porter 1997: 97), though this tells us little more than the fact that they do not precede the ninth century. In general, type 6 combs do not appear to be as common in Scotland as they are in Scandinavia and northern England. Aside from two largely complete examples from Skail, Deerness, they appear to be absent at Saevar Howe, Buckquoy, Beachview and the Brough Road, and there is only one clearly identifiable example at the Brough of Birsay. In Shetland, there are no clear-cut examples at Jarlshof. A comb case characteristic of this type from Earl's Bu, Orphir (dated somewhere between AD

1000 and 1500; Batey and Morris 1992: 33) is suggestive, as is an example from Freswick Links (Batey 1987: 227-228), and less diagnostic case fragments are known from block 7.1 (tenth century) at Scalloway, and phase 8.1 (eleventh to twelfth century) at Pool. Similarly, at Quoysgrew there is a case fragment and eight comb fragments that *could* be of type 6, but none are definitive. A likely example is number 2458 (fig. 8.10), a small comb terminal fragment with iron rivets and incised line decoration, found in a phase 1 context in the farm mound, together with shards of hemispherical steatite vessels, and dated to the tenth century.

Few of Atlantic Scotland's definitive type 6 combs are tightly dateable. There is a single example, complete with case, from a burial at Skaill Bay, Sandwick (Lyasight 1971; Graham-Campbell and Batey 1998: 59), that, given what we know about the furnished inhumations of Orkney, one assumes must date from before approximately AD 950. Indirect as this is, it is suggestive of the arrival of type 6 combs in Orkney within about 50 years of their first appearance in Scandinavia. Better-dated material comes from Pool, where a type 6 comb (Ambrosiani B1:1) was recovered from phase 8.2.1, while a case fragment comes from phase 8.1. The relevant deposits can be dated to the eleventh to twelfth centuries (J. Hunter *pers comm.*). These few examples do little more than confirm the Scandinavian chronology in the broadest terms.

Evidence is little more forthcoming in the Western Isles. At the broch site of Dun Mor Vaul, a type 6 comb was deposited in the wallspace, presumably some time after the structure went out of use (MacKie 1974: 90-91). There are four type 6 combs at Bornish, including two from Mound 2 and one from Mound 2A (the context of the fourth is unclear). Full phasing details for these mounds were not available at the time of writing, but they are thought to be broadly contemporary, with 'Norse' activity well-established on both by the eleventh century. One particular example is of note; it comes from a house in Mound 2, where it is associated with a decorated bone pin that has been dated to the tenth or eleventh century (Sharples 1997). Finally, a comb from a secure context lying stratigraphically beneath a date of AD 890-1030, at Archerfield, East Lothian (not included in this survey) corroborates the proposed mid-late Viking Age date for the type (S. Carter *pers comm.*) (fig. 8.11).

Type 7 is even less well-represented. The comb from the Cnip burial fits best into this type, which is little known in Scotland; the only other examples coming from Jarlshof (phase III), Kilpheder (small fragments in various phases), and Bornish (mound 2A). The type seems to be a regional deviation from types 5 or 6, perhaps adapting to the use of red deer antler, and as it is characteristic of Viking Age England and Ireland (see Chapters 6 and 7), it is notable that three of four examples were recovered in the Western Isles. Moreover, the Jarlshof example differs from the others, being closer to the original type 5 template. Given their similarities with English and Irish type 7 combs, one might speculate that the western examples were made in the Irish Sea region, rather than in Scandinavia. If this is the case, then the Cnip comb at least was manufactured fairly soon after arrival in the region, as it was deposited in a furnished grave that probably predates AD 950 (Graham-Campbell and Batey 1998: 154).

It is nothing new to suggest the persistence of type 11, 12 and 1c combs into the Viking Age in Atlantic Scotland, or that the presence of type 5 combs shows contact between Scandinavia and Atlantic Scotland in the ninth or early tenth century. However, the paucity of type 6 combs has not been previously recognised. Ambrosiani (1981: 36) has suggested that such combs are uncommon in Norway, but this seems to be a question of recovery, as detailed survey (by the present author) has identified the type in early phases at Trondheim, while there are also traces at Kaupang (see Chapter 6; table 6.8). Given their paucity, the provenances of the small number of Scottish type 6 combs merit further discussion (chapter 9). Similarly, the rarity of type 7 combs in Atlantic Scotland is of note. This type is elsewhere characteristic of England, Ireland, and, to a lesser degree, Denmark. Given that three of four examples were found in the Western Isles, the Irish connection may be most relevant. Irrespective of the detail, the presence of type 7 combs in Atlantic Scotland hints at connections beyond Norway.

Type 8 combs are more common in Scotland, particularly so in the west. In Orkney, type 8a is known from the Castle O'Snusgar, near Skaill Bay (D. Griffiths *pers comm.*), and there are fragments at Beachview, Birsay. Examples of type 8b have been recovered from the Brough of Birsay, and Jarlshof, while type 8c is known principally from Jarlshof. Unfortunately, none of these sites provides reliable dating evidence, though their absence from the early Viking Age site of Saevar Howe is consistent with their tenth to twelfth-century date in England and Ireland (see Chapter 5).

Better-dated material from Orkney comes from the interventions at Pool, Sanday, and Quoygrew, Westray (table 8.12). At Pool, only two fragmentary type 8b combs were found, but while one was unstratified, the other was recovered from a phase 8.2 (c. eleventh-twelfth-century) context. At Quoygrew, two clearly identifiable fragments of comb type 8a are known, and there is one of 8c, all recovered from eleventh to twelfth-century levels (e.g. no. 2457, fig. 8.12).

However, the best sequences for type 8 come from Bornish and Kilpheder, South Uist. Kilpheder is not yet published, but combs of type 8 are known from secure contexts throughout much of the sequence. Though Parker Pearson *et al.* (2004: fig. 8) propose a sequence of comb ornament that suggests a move through type 8a in phase 3 (radiocarbon dated to the eleventh century, M. Parker Pearson *pers comm.*) to 8b in phases 4-9 (dated between the mid-eleventh and early thirteenth centuries), in practice forms 8a and 8b appear together in phase 3, while 8c is present from phase 4. All three forms are present intermittently in the following phases. One might suggest that, in contrast to evidence from Ireland (e.g. Hurley and Scully 1997: 654-658), the sequence demonstrates the contemporaneity of types 8a, 8b, and 8c.

However, residuality seems to be a problem, as Parker-Pearson suggests that coins and metalwork occur in contexts dated up to a century later than one might expect (Parker Pearson *et al.* 2004b). There may also have been some reworking of deposits, leaving type 8c combs in early levels. The level of fragmentation in the assemblage would suggest that this is a possibility, and the relatively small number of identifiable fragments would imbue any intrusive examples with the potential to fundamentally alter the overall comb chronology.

At Bornish, most combs are known from Mounds 2 and 2A (where activity extends between the eleventh and fourteenth centuries). Mound 3 has been published, so clearer dating information is available. Here, 2 fragments of type 8a connecting plate are known (fig. 8.13). One comes from sand underlying the house, which cannot be tightly dated, though another pre-house sediment was radiocarbon dated to AD 980-1160 (calibrated to  $2\sigma$ ) (Marshall 2005: 153). The other was found in the house's lowest floor level, from which radiocarbon dates (calibrated to  $2\sigma$ ) of AD 1290-1440 and 1270-

1410 were obtained (Sharples 2005: 56). Two toothplate fragments that may be from the same comb form (they certainly relate to types 6, 7, 8 or 9), are known from contexts of similar date (Clark *et al.* 2005: 172). This is also broadly consistent with contexts within mounds 2 and 2A, from which there are large numbers of fragments of types 8a, 8b, and 8c (see table 8.5). Overall, one should probably continue to see type 8c as the latest type 8 variant, given its consistent dating in Ireland and (probably) northern England, and the present insecurity of the unpublished Scottish sequences (see Chapters 6 and 7). The degree of contemporaneity of types 8a and 8b is unclear.

The date of small, fine, single- and double-sided combs with numerous copper-alloy rivets seems fairly secure, as Scottish examples find parallels primarily in Scandinavia, where single-sided (type 9), and double-sided (type 13) forms are numerous from the tenth and thirteenth centuries respectively. Excavations in the city of Trondheim, in particular, recovered a large number of such combs from levels dated closely to between the late tenth and fourteenth centuries (see chapter 5). However, it would be more satisfactory if this chronology could be corroborated with Scottish data (table 8.13)

Small numbers of type 9 combs were recently excavated from the final occupation (presumably Norse) phase at Langskaill in Orkney (Moore and Wilson 2005), while there are several examples from medieval contexts at Beachview, Birsay (Batey and Freeman 1996: 59-62; Batey 1996: 143-44). The only secure, largely complete fragment is of Wiberg's type E4, and comes from phase Q at the 'Studio Site' (Batey 1996: 143-144; Morris 1996a: 107); several phases at this site have been radiocarbon dated to between the tenth and fourteenth centuries (Morris 1996: 132-133). Dateable examples are known from eleventh to fourteenth-century deposits at Quoygreu, Westray, Orkney. There are three type 9 combs from eleventh to twelfth-century deposits in structure 5, and a further example (no. 2468) was excavated from the top of a fish midden that had accumulated around the western end of structure 3 (the 'byre'). Radiocarbon dates suggest that these midden deposits developed between the eleventh and thirteenth centuries, and the comb was certainly deposited towards the end of that period.

Less well-dated examples are common throughout the north, with seven examples (and four small/tiny fragments) from Jarlshof (most being recovered from 'Viking and Later Norse Phase V'; Hamilton 1956: 166-168), three examples (and five small/tiny

fragments) from Sandwick North, and a poorly-provenanced example of type E4 from Unst (all in Shetland). In Orkney, there is a single example (type E5) from the Upper Norse Horizon at the Brough of Birsay, an ornate type E6 variant from Skail (Deerness), an E4 from Galilee, a type E6 from Ivar's Knowe, and a type E4 from Toft's Ness (all on Sanday), as well as twelve unstratified examples from Freswick Links (Caithness).

Having discussed the occurrence of types 5 to 9, it is pertinent to address the tenth to eleventh-century type transition in Scotland. It will be recalled (see Chapter 6) that western Scandinavia saw an early to mid-tenth century move from type 5 to type 6 (though the latter is not well-evidenced), followed by a replacement by type 9 towards the end of that century. The situation in Atlantic Scotland is similar, though type 6 is even more scarce here than in Norway. The reasons for this are difficult to ascertain, but if type 6 was a relatively short-lived comb form (as it certainly was in comparison to type 9), then it may be that it was never actively taken up as a desirable accessory in Atlantic Scotland. The peak of the Scandinavian diaspora had passed by the mid-tenth century, and perhaps contact with Scandinavia during this period was not sufficiently regular to ensure the transferral of new tastes in material culture. The longevity of types 9 to 13, and their contemporaneity with an apparent intensification of long-range trade across the North Sea (see Barrett 1997; Barrett *et al.* 1999; Barrett *et al.* 2004) go some way to explaining their much greater numbers in northern Scotland (see Chapter 9).

The relationships between the variants of types 8 and 9 are rather ambiguous. While 8c does seem to be contemporary with type 9 combs, the order of appearance of types 8a, 8b and 9 is unclear. Based on English, Irish, and Scandinavian parallels, one might expect types 8a and 8b to appear some time in the tenth century, and type 9 in the latter half of that century. In most cases, however, the stratigraphy of Atlantic Scotland cannot provide the chronological resolution necessary to assess the relationship between the types. One might note that at Pool and Quoysgrew, where both types do occur (if in small quantities), the situation is ambiguous. At Pool, all stratified examples of types 8b and 9 occur in phase 8.2 (eleventh to twelfth century). At Quoysgrew, type 8a and 9 combs were all recovered from eleventh to fourteenth-century deposits, though the former were found in the fish midden (column C and Area E), while all fragments of the latter (except one tiny fragment from area G, the farm mound) are from area F (the

area of the medieval house and byre). Interestingly, type 9 combs are rare in the west. The type is absent at Kilpheder, and Bornish provides only one small, ambiguous fragment and a poor quality iron-riveted imitation from mound 2 (fig. 8.14; see below).

The situation might be clarified through correspondence analysis. Given its scarcity, type 7 is excluded from the analysis, but it is possible to investigate the relationships between type 5, 6, 8a-c, and 9. When these are plotted on the first and second axes, though clusters are not as clear as they are for the double-sided forms (see above), something of a pattern is apparent (see fig. 8.15 and table 8.14). Type 5 combs are characterised by decorative scheme 1D (central motif), endplate form 1E (ornamental profiling), and the use of ring and dot ornament. One might also note the association of 'every edge' riveting with type 5 (see below). Type 9 is defined by the decorative use of copper alloy rivets in scheme 1M, while types 6, 8a, and 8b are more diffuse.

The plot is informative as to the transitions between type 5 and types 6, 8a-b, and 9. It is in marked contrast to the distribution of types 11, 12 and 13 (fig. 6.9), which was interpreted as the result of different manufacturing traditions. Figure 8.15 might thus be seen as representative of a range of developmental relationships. There is a degree of overlap between types 5, 6, 8a-c, and 9, and only type 5 forms a tight cluster. One might argue that this is because type 5 combs were developed in Scandinavia, and appeared in Atlantic Scotland fully-formed, while the other types share certain morphological similarities, and perhaps influenced one another's development in some way. Given their diversity and longevity, it is unsurprising that type 9 combs form the broadest group. Types 6, 8a, and 8b plot between types 5 and 9, with some examples of type 6 and 8c particularly close to the latter. Thus, the various comb forms of the tenth and eleventh centuries share certain morphological similarities that may be culturally informative.

With this in mind, the distributions of type 8 and 9 combs are of interest (fig. 8.16; cf fig. 7.2). Although the distributions of types are not mutually exclusive, and the above correspondence analyses failed to produce an unambiguous separation, table 8.4 shows that type 9 combs dominate in the Northern Isles, while type 8 combs tend to be more common in the Western Isles. The cultural and economic implications of these results may be significant.

Turning to type 13 combs now, recent excavations have facilitated the corroboration of dates from Oslo and Trondheim (table 8.15). Examples are known from eleventh to fourteenth-century deposits at Quoygrew, Westray, Orkney; in particular one might note a type 13 comb (no. 2466) recovered from primary floor levels within structure 1 (the hall), which was probably built in the thirteenth century. Three examples of type 13 combs (Wiberg types D2 and D4) are known from the final phases at Pool, Sanday. Radiocarbon-dating and associated ceramics suggest that these phases relate to a period around the start of the twelfth century AD (J. Hunter pers comm.). This suggests that little time had elapsed between the development of the form in Scandinavia, and its appearance in Orkney. Less well-dated type 13 combs are known from the eleventh- to thirteenth-century site of Sandwick North (Stummann-Hansen 2000: 95-96), the Sands of Breckon, and medieval phases at Jarlshof ('Viking and Later Norse VII'; Hamilton 1956: 179-187), all in Shetland. In Orkney, there are seventeen effectively unstratified finds from Freswick Links, and examples from the final phase of occupation at Langskaill (Moore and Wilson 2005), while one might also note individual finds from Skail (Deerness) and Howar (North Ronaldsay), as well as less well-provenanced spotfinds in Orkney and the Pentland Skerries. In the west there are three 'large/complete' examples of type 13 from Bornish, together with three 'tiny' fragments. Dating details were unavailable at the time of writing, though one of the complete examples from just below the topsoil.

It may be worthwhile to consider the possibility of spatial patterning within Wiberg's type 13 subforms. Clarke and Heald (2002) suggest a clustering of combs with endplate form 2B (concave) in Shetland, and an absence of those with endplate form 2A (straight) from Mainland, Orkney. Combs with straight endplates (form 2A) equate to Wiberg's type D2, dated to between the mid-twelfth and mid-fourteenth centuries in Norway, while secure examples in Scotland come from Quoygrew (thirteenth to fourteenth century), Pool (late eleventh-twelfth century) and Sandwick North (eleventh-thirteenth century on the basis of finds and architectural typology). No combs with endplate form 2B (concave-ended) come from dated contexts within Scotland, but they are equivalent to Wiberg's type D3 dated to the thirteenth- sixteenth centuries in Norway.

Heald and Clarke's thesis that the Shetland type D3 combs constitute a discrete group, distinct from Scandinavian examples, is dependent upon the presence of close-set riveting and 'ribbed' connecting plates in the former. Such subdivision of an already small corpus leads to a diminutive sample size, negating the recognition of local variation. This problem is reflected in the article itself; of four illustrated 'concave endplate combs from Jarlshof, Shetland' two lack the distinctive ribbing. If this criterion is disregarded, the distribution of 'concave-ended' double-sided combs becomes wider (*e.g.* Crawford 1996: 88). Moreover, all of Clarke and Heald's variants of endplate form are present in the Trondheim collection, so the type cannot be said to be regionally distinctive in Norway. Thus, even if Atlantic Scotland's regional variation was proven genuine, the consumers from its various islands may still have all been patronising the same market.

Examples of type 14a from Scotland are unknown to the author, though there is an example from a phase 8.2 (eleventh to twelfth century) context at Pool, which, though purportedly made of antler (Smith *forthcoming-a*, fits well into the British Isles' eleventh to twelfth-century tradition of high status small combs, such as the example from Blue Bridge Lane, York (Chapter 7). The Jarlshof example is probably also best understood in this light. Unfortunately, though type 14b combs were recorded from St. Columba's Cave (western Scotland), Jarlshof and Sandwick, Unst (Shetland), and, Quoysgrew, Skail, and Fea Hill, Sanday (all Orkney), none are from secure contexts. Type 14c combs were not recorded in this survey, though an example with Romanesque ornament is known from Jedburgh Abbey (Higgit 1987, 1995), dated on art historical grounds to the early twelfth century.

Finally, some clarification of the 'other' group is appropriate. Fourteen comb fragments did not fit easily into any of the types defined above. The most common forms within this group were small, one-piece single-sided combs, frequently roughly hewn from bone (*fig. 8.17*). They were found at Stackel Brae, St Boniface Church, and the Broch of Burrian, with finer examples from the Broch of Borwick, Big Meal Howe, and Howe, Stromness (all in Orkney). Though none are securely stratified, one might suggest that they have a pre-Viking Age date. Also included were a variety of forms that were only recorded as individual examples, such as a one-piece handled comb from Boreray, Lewis, a comb with long connecting plates of sub-triangular profile from 'Old Cattlefold', Lewis, and an unidentifiable fragment that may have related to a case from

Bornish, South Uist (all in the Western Isles) (fig. 8.18). This small sample hints at distinctive regional traditions in northern and western Scotland, but this should not be over-emphasised, as there were also similarities; type 11 and 1c combs are found in both regions (see above), as are the long-handled 'weaving' combs (fig. 8.19; *e.g.* MacGregor 1975b: figs 12-13; Porter 1997: 96) not included in this survey.

## 8.4 Raw material analysis

In the following, combs are identified as bone, antler, ivory, horn, cetacean bone, or indeterminate (though ivory, horn and cetacean bone are of minimal importance, and are grouped as 'other' in the tables). Where possible, antler is identified to species, qualified as 'probably red deer antler', 'probably reindeer antler' or 'probably elk antler'. Combs are studied according to region and type, with 'large/complete' and 'small/tiny' size categories treated separately, in order to minimise problems of quantification or misidentification to type.

In tables 8.16 and 8.17, one should focus first upon large fragments and complete combs, as these are more readily identifiable to type and easily quantifiable. However, this level of completion means that the broken surfaces needed for raw material identification are sometimes lacking, while unsympathetic consolidation and restoration is a problem in many antiquarian finds. Thus, the small and tiny fragments may lend further clarity and support.

Most combs from Scotland conventionally dated to the pre-Viking period (types 1c, 11, and 12) seem to have been made of antler (tables 8.16 and 8.17). In western Scotland, red deer is ubiquitous, but in Orkney a considerable quantity were identified as reindeer. In particular, thirteen (large or complete) type 12 combs were identified as probable reindeer antler, and this material was also used in at least three type 1c combs, and one fragmentary example of type 11<sup>4</sup>. Many of these combs might easily be explained away given the possibility that they were in active production and use into the early Viking

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<sup>4</sup> This fragment was confidently identified as 'probably reindeer antler', but, given the use of heavy consolidants that obscured macrostructure, one must treat this result with a little caution.

Age (see above). Thus, it is logical to focus on those combs from secure pre-Viking Age contexts (see **table 8.18**).

Unfortunately, few such combs could be confidently identified. The single well-dated comb fragment from Skail, Deerness could only be identified as indeterminate antler, as could the example from Saevar Howe, and the tiny toothplate fragment from the Brough Road. Unfortunately, though six comb fragments are known from stratified deposits at Howe, Stromness, the poor preservation (**fig. 8.20**) of skeletal material at the site was such that confident identification to species was impossible. Though one comb (1083) was well-preserved, its small size and high level of finishing preserved no diagnostic characteristics. This comb has been previously identified as 'probably reindeer' (Ballin Smith 1995: 209). This is an extremely noteworthy identification given that it comes from a pre-phase 8 context, and looks to be pre-Roman Iron Age in morphology. Thus, the negative results of the present survey are important.

Thus, though it seems that reindeer antler was a common comb-making material from the ninth century onwards (subject to the geographical variability discussed below), it is not yet possible to claim that it was widely introduced as a working medium before this point. Though further biomolecular analyses of the indeterminate specimens (particularly those from Howe) might produce further clarity, thus far antler combs have failed to provide incontrovertible evidence for pre-Viking contact between Scandinavia and Scotland.

Skeletal bone was not common in any region except at the site of the Broch of Burrian, on North Ronaldsay. The unusually extensive use of postcranial material at this site probably relates to relative detachment from access to antler sources, and may indicate either the absence of a local red deer population, or its early extirpation. By extension, this argument would imply local manufacture.

Type 5 combs are dominated by antler, to a greater degree than previous types, and reindeer antler seems to have been the overwhelmingly popular choice of materials, which, together with variations in manufacturing technique (see below) has implications for their place of manufacture. Type 6 and 7 combs are infrequent finds, so it is difficult to say much about their raw materials, but antler seems to have been important.

Though type 8 combs incorporated both bone and antler, red deer antler seems to have been the most common raw material in these forms. Given the high level of working on type 9 and 13 combs, it is much more difficult to identify their raw material, and a significant proportion were necessarily termed 'indeterminate antler'. Nonetheless, a considerable number from all regions seem to be of reindeer, suggesting a Scandinavian origin for the raw materials, or for the combs themselves.

## 8.5 Ornamental traits

Together with form and raw material exploitation, decoration is one of the main features of combs that may be used in the recognition of geographical, chronological, and 'stylistic' patterning. Thus, in this section the occurrence and arrangement of decorative motifs will be studied, as will the schemes used to plan out overall ornamental designs. Comparisons will be made between regions of Scotland, as well as with northern England and Scandinavia.

Regional variation in the use of decorative motifs can only be meaningfully assessed once chronological variation is controlled for. Given Atlantic Scotland's lack of stratigraphy, in practice this means that ornament must be assessed on a type-by-type basis. In general, analysis revealed little spatial variability in the frequency of occurrence of various decorative motifs, but the patterning on one or two types is of note (tables 8.19 -8.21).

In general terms, table 8.19 makes it clear that ring and dot is much more important in types 1c, 11, and 12, than in later comb forms. In particular, interconnected strings of ring and dot are limited to these types. Conversely, vertical lines and interlace ornament reach their full floruit in type 5 as noted above, while rivets only act as a noticeable facet of decoration in types 9 and 13. Of the less well-represented styles of ornament, openwork carving is only really important on type 1c combs, though it can also appear on Scandinavian type 9 combs. These trends are familiar (see Chapters 6 and 7).

Otherwise, there is no evidence of chronological patterning in motifs. In terms of spatial variation, no clear patterning within single comb types can be observed (*contra*

Clarke and Heald 2002). This may be partly because sample sizes are small, but also because it is types themselves that often have patterned regional distributions.

In detail, one might note the relative scarcity of interlace decoration on type 5 combs in Scotland; a trait very common in the Birka corpus (see above). In Scotland it is only present in significant numbers at Jarlshof (table 8.22; cf table 8.23). Cross-hatching is occasionally used as a substitute for interlace (fig. 8.21), while type 5 combs from graves tend to display ring and dot ornament. This pattern may be chronologically informative, though the date ranges of the various techniques of decoration seem rather broad. Ambrosiani (1981: fig. 10) has suggested that type 5 combs with simple incised line ornament (her type A1 combs) date to between the mid-ninth and mid-tenth centuries, those with ring and dot decoration (A2) to before AD 900, and those with fields of interlace (A3) to between the last quarter of the ninth and first quarter of the tenth century. Thus, the Scottish grave combs best fit into the ninth century. A type 6 comb from a grave in Skail Bay, Sandwick, is decorated with geometric ornament, and thus does not fit well into any of Ambrosiani's type B subclasses, though it is closest to form B1:3 (dating from c. AD 900). Its overall design is suggestive of imitation of type 5, and thus further supports an early tenth-century date. A type 7 comb from a burial at Cnip, Lewis is decorated with cross-hatching, and is thus difficult to date more precisely, but given its context is again unlikely to date after c. AD 950.

However, the small numbers of types 6 and 7 do not permit quantitative analysis of their ornament. Types 8a and 8b almost invariably display ornament composed of incised lines and geometric motifs such as obliques, chevrons, meanders, and zig-zags (fig. 8.22). Such designs have interesting parallels in Romanesque sculpture (Friar 2003: 150-152). No examples of type 8c employ incised, punched, or openwork ornament, and types 9 and 13 utilise a limited repertoire of motifs (ring and dot and horizontal lines). Interestingly, the openwork decoration seen at Trondheim and Bergen (Flodin 1989: Ill 20; Hansen 2005: fig. 46), and even in northern England (see Chapter 7) is unrepresented in medieval combs from Atlantic Scotland.

Notably, the regional patterning evident at the type level does not appear to be present in decorative motifs. However, particular examples are of interest. A poorly provenanced, probably reworked type 11 comb from Skail, Deerness is notable for its

'egg-and-dart' decoration (fig. 8.23); the only occurrence of this design in the corpus. Indeed, direct parallels are elusive anywhere in Europe, with the clearest precedent coming from classical and Romanesque sculpture (e.g Friar 2003: 150-151). However, the parallel is not sufficiently close to justify taking the ornament as support for the origins of type 11 in Late Roman type 10 combs (see Chapter 6).

On the basis of its arrangement of vertical line decoration, a type 5 comb from a burial at the Brough Road, Birsay has a close parallel in a context dated to between AD 950 and 963 at Novgorod (Smirnova 2005: Appendix; fig. 8.24). An extremely ornate type 9 comb from Skail, Deerness is more difficult to match. Its 'maned' back is similar to a few examples from the Northern Isles and Trondheim, as well as the Frisian terp mounds (see Roes 1963: Plates XXV and XXVI). It is extremely long, and features two tooth gauges on its single edge, separated by a decorative central partition. Pictish or Frisian influences have been suggested, as the comb features zoomorphic motifs that echo Pictish sculpture. However, a comb of similar form - if lacking the zoomorphism - is known from medieval Trondheim (fig. 8.25).

Returning to the broader picture, given the frequency of combs featuring ring-and-dot ornament, it may be fruitful to analyse the arrangements of these motifs (see table 8.21). Unfortunately, the small sample size of combs with ring and dot ornament rules out the possibility of seeking regional variation in motif arrangement, but variation by type may demonstrate chronological change, and comparisons with Scandinavia may reveal broad spatial patterning. Accepting the limits of the sample size, type 5 combs in Scotland show conservatism of design, at least concerning motif arrangement. Figure 8, I, Z, and geometric designs, though common in Scandinavia, were absent from Scotland, as well as England (chapter 7). Recumbent-S designs (fig. 8.26) are exclusively found on type 5 combs. Types 1c, 11, and 12 show some variety, often being distinguished by intricate patterns or a complete covering in motifs. No 'large/complete' type 6, 7 or 8 combs from Scotland have ring and dot ornament<sup>5</sup>. Late Viking Age and medieval types 9 and 13 show a certain degree of variation, though it should be noted that they face the limitations of available space, given the numbers of rivets in many examples. It is on these combs that the less intricately arranged (*ie* individual, clustered, or apparently

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<sup>5</sup> Three 'small/tiny' fragments of type 8a, and a single fragment of type 8b from Bornish, together with single fragments of type 8a from Westness and 'North Uist' bear ring and dot ornament. They seem to show 'parallel line' arrangement, but their fragmentary nature excludes them from analysis.

randomly positioned) motifs become particularly important, as they frequently act as endplate ornament (fig. 8.27).

Moving up to the next level of analysis, decorative schemes have been shown to have some utility (Chapter 4; see also Smirnova 2002). In the Scottish sample (table 8.24), all type-based (chronological) variation relates to schemes for which reasonably secure assumptions as to temporal range could be made on the basis of existing scholarship (e.g. Smirnova 2005: 57-70; see chapter 6). Unfortunately, heavy fragmentation in western Scotland does not permit analysis of regional variation in the popularity of various decorative schemes. This must remain an area for future analysis should the Scottish dataset be significantly augmented in the coming years.

## 8.6 Method of manufacture

Excavated waste deposits are rare in Scotland (though see section 8.8 below), and any understanding of manufacturing practice is fundamentally dependent on analysis of the combs themselves. In table 8.25 rivet materials are analysed. Iron is dominant in types 11, 12, 1c, 5, 8a, 8b, and 8c, while types 9 and 13 are with very few exceptions riveted using copper alloy. Of the rarer comb types, all type 7 examples are fixed using iron, while both copper alloy- and iron-riveted examples of type 6 are known. There is some variation and idiosyncrasy within this pattern; one type 9 comb from the Brough of Birsay is of particular note, as its 'rivets' consist of rolled up copper alloy sheets (fig. 8.28). This technique is paralleled in Norway's towns. Indeed, at Bergen, Hansen (Hansen 2005: 159) has even identified the tools involved in rivet manufacture.

It would be useful to pin down parallels for this pattern. In no region within Scotland, or indeed across Europe where types 9 and 13 are common, do iron rivets feature significantly in these combs. The situation regarding type 6 is more complex. At Trondheim (and in Trøndelag), type 6 combs are riveted with copper alloy. It has not been possible to directly record combs from elsewhere in Norway, but it is notable that at Oslo, Wiberg (1977, 1979, 1987; cf. Flodin 1989) incorporates type 6 into type E3 of her scheme of copper-alloy riveted combs. At Birka the use of copper-alloy rivets is characteristic of type 6 combs (Ambrosiani 1981). In contrast, in northern England and Ireland, type 6 combs are exclusively riveted with iron, as are most at Haithabu, while the Novgorod pattern is rather mixed (Chapter 2). Thus, one might suggest that while

the type 7 combs in Scotland imply English, Irish or Danish connections, the diversity apparent in type 6 suggests that examples were displaced from both England/Ireland and Scandinavia.

Turning to riveting technique, Iron Age and Viking Age combs in Scotland are most commonly fixed using the 'alternating edge' style (tables 8.26 and 8.27). The techniques used in type 11 combs vary considerably, but do not seem to be related to geography. The presence of the 'every edge' technique in four type 5 combs from Orkney is significant, given its apparent popularity in this type at Trøndelag and Birka (see Chapter 2), but the 'alternating edge' technique (for which there are five examples) is most closely paralleled at Haithabu. The two type 6 combs for which the technique could be established displayed 'mixed' and (probable) 'every edge'<sup>6</sup> riveting; the latter at least suggesting Scandinavian, rather than English or Irish, manufacture. Indeed, it is notable that this example employs copper alloy rivets (fig. 8.29).

Riveting technique is particularly important in the medieval context, as it acts as a form of decoration. Many more rivets are used than are needed purely for fastening, and they are often arranged in lines, groups, or even in one case, as a cross motif (fig. 8.30).

'Rivet-and-groove' ornament (decorative schemes 1M and 2G) is popular, while round-backed type 9 forms utilise rivets as decoration, without the incision of horizontal grooves (Scheme 1N). These decorative rivet arrangements seem to have been widely adopted across Europe, meaning that many type 9 and 13 combs are difficult to source on the basis of their riveting pattern. However, those type 9 combs with 'basic' riveting in Scotland are invariably fixed using the 'every edge' or 'central' methods, which are inconsistent with manufacture in the British Isles, suggesting instead an origin in Trondheim, Bergen, Oslo, or another of Scandinavia's late Viking Age towns.

Some remarks regarding tooth-cutting patterns are appropriate. For the majority of fragments, comments are necessarily based upon general impressions, as only complete (*ie* >80% preserved) combs allow quantitative analysis. Analysis of this small subsample lends useful support to generalising assertions. The first point to be made is that very few connecting plates entirely lack tooth-cutting marks; they tend to be present in some

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<sup>6</sup> The comb is fragmented, such that it is difficult to confidently ascertain the riveting technique. However, the rivets are sufficiently closely spaced to rule out the 'alternating edge' technique, and 'every edge' seems most likely (see fig. 8.29).

form, whether deliberate or accidental. They do not seem to be a fundamental part of ornament on type 11, as they are sometimes absent, and may be roughly done (fig. 8.31; tables 8.28 and 8.29). They are more important on type 12, and their significance as part of the ornament of type 1c is ambiguous. They are utilised on comb types 5 to 9, though their quality seems variable on types 5 and 6, sometimes being very deliberate and decorative, other times random or absent. Decorative cut marks are a very important characteristic of type 8 combs, and are more evenly cut on type 9 than 13. Unfortunately, given the high fragmentation in the Western Isles, it is difficult to detect regional variation in this practice. However, one might note a few individual cases that differ from the mainstream practice. In particular, combs with 'asymmetric' tooth-cutting have tooth cuts at one end of a connecting plate, and towards the other extremity on the reverse, suggesting that the comb was turned over in the hand (or clamp) while teeth were being cut. Unfortunately, evidence of this practice is not widespread enough to allow the detection of meaningful patterning.

Turning now to the dimensions of billets, it will be seen that the distribution of billet thickness is extraordinarily similar to that recorded for the material from northern England, Birka, and Trondheim (fig. 8.32; cf fig. 7.29). Analysis of billet width yields similar results; the curves for England and Scotland are almost identical (fig. 8.33; cf fig. 7.30). Comparing these curves with those from Birka and Trondheim, differences are apparent. In particular, billets of greater width are known at Birka; this surely relates to the use of elk antler, the palmations of which provide much greater lateral expanses of compact material than do red deer or reindeer. Nonetheless, the most striking feature of these graphs is their similarity.

## 8.7 Quality of manufacture

Tables 8.30 and 8.31 show the quality scores for each comb type in the Scottish corpus. Type 1c combs are notable for their consistently high standard of construction and decoration. These combs are decorated to a standard well beyond that which one might term 'professional', and each example appears to be unique. There is an exquisite example from Dun Cuier (fig. 8.34), but many fine examples are also known from Orkney.

Type 11 are also of good quality (fig. 8.35), if not up to the consistently high standard of type 1c. Type 12 combs are frequently less accomplished, being manufactured to a variable standard (fig. 8.36). However, certain such combs were difficult to ascribe a quality score, as the standards of construction and ornament were contradictory. In particular, some double-sided types were well riveted and cut, but had very rudimentary ornament (fig. 8.37).

Type 5 combs are generally finished to a high quality, and no complete type 5 combs were found to be totally devoid of decoration, either in Britain, or in Scandinavia. Indeed, there is much similarity between the type 5 combs of Atlantic Scotland and their counterparts in the Scandinavian 'homeland' (Tables 8.32 and 8.33). The Scottish examples compare with all but the highest quality examples from Birka (the ornate 'monumental' or 'horse' combs known at such sites are conspicuously absent in Scotland (*cf* chapter 6). These findings are consistent with type 5 combs being brought (by travel or trade) to Atlantic Scotland from Scandinavia's Viking Age towns. The absence of the highest quality combs may be informative as to the status of the raiders, traders and settlers arriving in Orkney during the early Viking Age.

Type 6 combs are not present in sufficient numbers in Atlantic Scotland to justify quantitative comparison with the Birka corpus. Nonetheless, some comment is appropriate. Although there is an ornate type 6 comb from Skail Bay<sup>7</sup>, in most other cases decoration is simple (fig. 8.38). This is consistent - at least for the British Isles - with the idea of type 5 as important in display, and type 6 a more functional item. Nonetheless, we have seen that the type 5-6 division is a chronological development. Thus, one might suggest that the time between the ninth and tenth centuries saw changing roles for combs, reflected in their morphology.

Type 8 combs from Scotland are rarely of high quality; frequently being competently, but economically made. Type 8c in particular is notable for its lack of ornament and simple construction. Type 9 and 13 combs were made to a range of qualities, being diverse in form, and united primarily by the decorative use of copper alloy rivets. Examples comparable in quality to the finest workmanship exhibited at Trondheim are

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<sup>7</sup> This comb comes from a furnished burial, so presumably dates to the first half of the 10<sup>th</sup> century. As such, it sits early in the development of type 6 combs, arguably representing a 'link' between ornate type 5 combs, and later, undecorated type 6 (Ambrosiani B4) combs.

lacking; openwork is absent, and incised decoration is uncommon. That said, all type 9 combs that could be assessed were given quality scores of Q2 or Q3.

The same cannot be said of type 13. Though 'biconvex-ended' (Wiberg D1) and 'offset' (D7) type 13 combs are generally constructed and finished to a high standard, variation is greater amongst other subforms. In particular, there are several roughly made, straight-ended type 13 combs (D2) (fig. 8.39), perhaps suggesting that they were produced with the less discerning consumer in mind, though there are also ornate examples of the type (fig. 8.40). In general, type 13 combs are best seen as competently made, mass-produced items, though some were decorated and finished with more care than others.

Given the lack of evidence for large Viking Age settlements or towns in northern and western Scotland, the 'settlement character' comparisons undertaken in Chapter 7 are inappropriate here. However, certain observations are possible. The contexts most closely associated with high quality combs are graves (fig. 8.41). This is partially a dating issue, as most graves are provisioned with the large, ostentatious type 5 combs. Grave combs will be considered further in the next section, and in Chapter 9.

## 8.8 Use wear and repair

There are no substantial use wear variations between comb types within Scotland, though there is a hint of difference between type 5 and 6 combs (tables 8.34 and 8.35). This disparity partially relates to differences in context of deposition. While most type 6 combs either come from settlement sites or are unprovenanced spot finds, a considerable number of type 5 combs (seven of eighteen large fragments or complete combs) are from inhumation burials (note that there is also a fragment from a probable cremation grave at Lyking, Orkney). It is notable that of the ten combs (including one type 6 and one type 7 comb) studied from graves in Scotland, seven had little to no wear (score 1) on their teeth, while this characteristic could not be assessed on the remaining three (table 8.36 and fig. 8.42). Although this small sample cannot be statistically tested, it is nonetheless notable that none of the combs studied show medium or greater levels of wear. If we compare the overall grave comb wear pattern with that of combs from non-grave contexts in Scotland, the difference is striking, as combs from non-graves seem to be worn (wear score 3 and above) and unworn in equal proportion (table 8.37).

Not all comb types show such clear patterning as type 5. Types 1c, 11, 12, 9 and 13 tend to cluster around the 'W3' category, while types 6, 7, 8a, 8b, and 8c are difficult to comment on, given the low frequency of large fragments and complete combs. Although the small size of the sample must again be noted, type 14b combs appear relatively unworn, and this may relate to the disposability of the type (*cf* Chapter 7).

The only hint of regional variation in use relates to type 13 combs, which seem to be relatively highly worn in western Scotland. This may imply a longer use life for examples of these combs in the west than in the north, which arguably relates to restricted access to the (presumably Scandinavian) markets at which they could be acquired. Comb quality and wear score do not seem to be closely linked, as both highly ornate and more standard combs demonstrate a range of levels of wear. A comparison with the dataset from northern England is similarly uninformative (tables 8.30, 8.31, 8.34, 8.35; *cf* table 7.40).

Before leaving the subject of wear, it is appropriate to consider evidence for repair. Examples are few, and can only be analysed in a qualitative manner. However, the presence of reworked combs is nonetheless of interest, as it may elucidate the basis of a combmaker's work. Examples of professional repair may be suggestive of relative ease of contact with professional craftsmen, while poorly accomplished attempts at repair may suggest some degree of isolation from those able to repair, or replace, a comb. With so little direct evidence for combmaking in the Northern Isles, evidence for repair in this region is particularly significant. Individual cases will be discussed in Chapter 9; herein it is sufficient simply to point out any broad trends.

Evidence of such repair is scarce on types 1c, 11 and 12 (though see fig. 8.43 and 8.44), while there are two possible examples of repair to type 5 combs (fig. 8.45). Examples of repair to type 6 are unknown, but a type 7 from Jarlshof (no 1282) shows truncation and smoothing after a break (fig. 8.45). The relative paucity of complete examples of type 8 combs in Scotland rather confounds recognition of repair, and none were noted. Types 9 and 13 seem to have been subject to repair relatively frequently (fig. 8.46). Repair in type 14b is difficult to assess, but seems unlikely to be a significant phenomenon, given their apparent disposability and lack of wear. In general, evidence

of repair is of most use in the study of individual examples, and as such will contribute to the writing of object biographies (Chapter 9).

## 8.9 Manufacturing evidence

Deposits of part-worked and waste bone/ antler are rare in Scotland. Nonetheless, there are some indications that local manufacture of combs did take place in the Viking Age and medieval period. In particular, the presence of hand-held clamps at the Broch of Burrian (North Ronaldsay), Pool (Sanday), Skaill (Deerness), and Bornish (South Uist) might be taken as evidence of such activities (fig. 8.47; see also Sharples 2005: fig. 102). Clamps may have been used in the manufacture of other objects, though (*contra* Coatsworth and Pinder 2002) metalworking seems unlikely, given the relative strengths of the materials, so bone/antler and woodworking seem most likely. The importance of woodworking in this period is difficult to assess, though it was presumably minimal in northern Scotland. The clamps fit combs particularly well, and explain the evidence for comb-turning during tooth cutting (see above). Clamps are known from several sites in England, Scandinavia, Iceland and Greenland, including York (MacGregor *et al.* 1999: 1996), Haithabu (Tempel 1969: Taf 1), and Sandnes (Christensen 1987: 26-28), in some cases at the same sites as combs and combmaking waste, though the association is equivocal (*e.g.* Lloyds Bank, York).

Isolated manufacturing blanks are known from the Castle O' Snusgar (David Griffiths *pers comm.*), but waste deposits are otherwise almost entirely absent from the Northern Isles. On the Scottish mainland, blanks are known from Buiston crannog, Ayrshire (fig. 8.48), while a small quantity of waste material from Late Iron Age contexts at Traigh Bostadh, Bernera, in the Western Isles, represents the earliest significant evidence. The material used is exclusively red deer; and its near-exhaustive exploitation arguably suggests a shortage of resources (see Smith *forthcoming-b*).

The Bostadh waste is probably largely the result of combmaking, and a few fragments from the site unambiguously represent comb manufacture. There is evidence for the production of connecting plate blanks, in addition to a small number of tiny, wedge-shaped slivers of antler. These are similar to the many examples known from Coppergate, where they represent the offcuts produced when the backs of billets were sawn flush with connecting plates. However, the Bostadh examples are much smaller,

and probably represent the trimming and rounding of endplate corners. They thus presumably relate to double-sided combs (fig. 8.49). This small quantity of material is significant, as it represents the first evidence for the manufacture of Late Iron Age combs in Scotland. There is a single antler-offcut from a Norse phase, but this alone is insufficient to demonstrate the presence of a Viking Age combmaker onsite. Moreover, no 'Norse' comb forms were found; all were of types 12 and 1c.

From the Viking Age onward, evidence is scarce, and appears to be largely limited to the west of Scotland. At Whithorn, Galloway, comb-making was taking place on a considerable scale between the late ninth and late twelfth centuries (Nicholson 1997: 474). However, although there is much evidence for the process itself, there are few fragments of completed combs, and those that are present seem to be associated with a repair-shop. Red deer antler is the primary raw material exploited. Based on published material, it is difficult to say much about the types of combs manufactured on site. Although Nicholson (Nicholson 1997: 471) identifies two connecting plate blanks as Dunlevy class F1 (herein type 5) and three as F3 (herein type 8b), the lack of illustrations or images is such that one should exercise caution. Nonetheless, it is interesting to note that, apart from the few examples of type 11 (testifying to pre-Viking/ early Viking Age activity), most of the *completed* combs present could be classified as types 8a and 8b. Rivets are iron, and, from published illustrations (Nicholson 1997: fig. 10.131), seem to be attached at alternating edges, as is the case in England (Chapter 7) and (based on Dunlevy's descriptions) Ireland.

A relatively large collection of waste material is known from Bornish, South Uist (Sharples 1999). The debris is clearly related to specialised comb manufacture, but a fourteenth-century radiocarbon date just above the deposit, and the fact that the waste sits on a substantial build-up above a thirteenth-century layer, suggest that the activity took place only for a short period of time in the fourteenth century (Niall Sharples *pers comm.*) The waste is made up very largely of red deer antler, and Sharples reports that a number of billet blanks display the distinctive lenticular or diamond-shaped section characteristic of double-sided combs, while others are flat, probably relating to a single-sided form. One might assume that these were of types 13 and 9 respectively, but both are poorly represented in the finished material. Given this paucity of finished examples, one cannot be sure whether this waste related to type 9 and 13 combs riveted using copper alloy, or to iron-riveted local imitations, such as are known at the Udal, Jarlshof,

and York (fig. 8.50). The waste's association with small fragments of copper-alloy sheeting is suggestive, but the latter is not present in substantial quantity.

Inference is further hampered by the problems of definitively demonstrating the manufacture of single-sided combs; while lenticular-shaped blanks must relate to double-sided combs, the reverse is not necessarily true of flat-sided billets. However, the double-sided composite comb blanks mean that the waste certainly cannot all be reconciled with the form of type 8 or type 14b combs. Thus, though the evidence is rather indirect, it seems that type 13 combs, and possibly type 9 combs, were being produced at Bornish in the fourteenth century. The presence of such a manufacturing centre in the Hebrides is notable, as the author knows of no other evidence for the production of either type 9 or 13 combs west of Scandinavia.

It is also of note that there is evidence for comb manufacture at the Udal, North Uist (Crawford pers comm in Addyman and Hill 1969: 76). However, as this site has not yet been published, it is difficult to comment upon, other than to note it as one of several sites of comb manufacture in the Irish Sea region during the medieval period. This may be contrasted with the relative paucity of such evidence in northern Scotland. The evidence would suggest that in the late medieval period at least, the Western Isles were largely self-sufficient in combs, while Orkney and Shetland were still dependent upon imports from Scandinavia. However, this assertion is still based upon a relatively small number of sites, and until further sites are discovered, information taken from combs themselves is likely to be key (see above).

## 8.10 Discussion

The chronological analysis of comb types from Scotland has been worthwhile. Though well-dated contexts are few, the comparison of combs that *do* have a secure provenance with the corpus as a whole has afforded the Scottish sequence some clarity. Further chronological resolution is provided by comparison with Scandinavian, English, and Irish contexts. Until recently, it was very difficult to identify and explain geographical differences in comb style. The paucity of good radiocarbon dates for levels from which combs were retrieved, and - for Scotland in particular - a shortage of well-excavated, clearly-stratified, multiperiod sites, has led to an inability to identify tightly-defined

comb types diagnostic of a particular period. Thus, local, regional, and inter-regional comparisons are confounded by insecurity of dating. The chronology outlined above provides a firmer basis on which to base analyses of this kind.

In detail, type 11, 12 and 1c combs seem to be contemporary. Their persistence into the ninth century cannot be proven, but it is problematic to argue that their absence in phases of this date at a few well-excavated sites indicates the cessation of their use. On the contrary, the dating evidence is no less consistent with their persistence than with the alternative, and an immediate, widespread, and wholesale substitution of one comb type for another seems inherently unlikely. Although there is no published stratigraphic co-occurrence of a type 5 comb with an example of type 1c, 11, or 12, the forms *do* occur together in the same phases at Pool. The case thus remains ambiguous, but its implications are important, and will be discussed further in chapter 9.

Whether or not types 1c, 11, and 12 extended into the Viking Age, they were soon replaced by type 5 combs, which in turn were supplanted by type 6 forms, if in smaller numbers. The broadly contemporary type 7 forms are less common in Scotland than in England. However, types 8a and 8b are important, probably from the tenth to twelfth centuries, but with a possibly extended currency in the west (see above). Type 9 combs are present in Scotland at least from the eleventh century, though whether their arrival precedes that of types 8a and 8b is unclear. Based on Irish parallels, type 8c was probably broadly contemporary with type 9 in the twelfth and thirteenth centuries. Type 13 forms soon arrived in Atlantic Scotland, as early as the twelfth century at Pool. Further clarity may be afforded by a more detailed study of type 9 and 13 subgroups in dated (Scandinavian) contexts.

Regional comparisons have been similarly informative, as the collections from northern and western Scotland show some notable differences in the presence/absence and quantities of combs of various types (table 8.38), and both differ from northern England (Chapter 7). When one compares comb type distribution in the three regions, a number of patterns become visible. As has been discussed, types 11 and 12 show clear differences in distribution around the North and Irish Seas, while type 5 is much better represented in Scotland than in northern England, though this may be due to the lack of ninth-century excavations in the latter. Much more telling is the dominance of type 6 and 7 in Viking Age England, compared with their rarity in contemporary

Scotland, where their place seems to be taken by types 8a and 8b. In later years, there are signs of a regional disparity in the frequencies of types 8, 9 and 13. Types 9 and 13 only dominate in the Northern Isles, while type 8 forms are more common in both England and the west of Scotland. The relative scarcity of type 14b combs in Scotland is also clear; this pattern can be explained by the extended currency of composite combs in Scandinavia and its northern British colonies.

The northern/western disparities demand explanation. The presence of type 11 (which was probably developed in the Irish Sea region, see Chapter 6) in the Northern Isles is suggestive of some level of maritime contact. This is unsurprising, but it is interesting that there is very little evidence of type 12 moving in the other direction. One might suggest that even at this early date, the Western Isles were manufacturing and/or consuming combs in a distinctly 'Irish' tradition, while the Orcadian and Shetlandic populations incorporated ideas from a wider range of areas. In particular, the importance of type 12 combs is suggestive of contact with the Pictish mainland or Anglo-Saxon England.

Irish contacts also seem key to understanding the North/West disparity in the popularity of types 8a, 8b, 8c, 9, and 13. Composite combs remain popular in Ireland into the thirteenth century (Chapter 6; Hurley and Scully 1997: 654-658), but type 9 or 13 combs are never important in these contexts. Thus, the combs of western Scotland clearly fall into an Irish Sea milieu, rather than drawing inspiration from Scandinavian conventions. In contrast, the people of the Northern Isles and Caithness consumed large numbers of types 9 and 13, probably exported directly from Norway, together with smaller numbers of types 8a, 8b, and 8c. Comb choice thus seems to have articulated closely with contemporary politics and economics (see Chapter 9).

One may also note patterning in the presence and absence of discrete attributes of combs. There is some evidence for a chronological change in the repertoire of motifs incorporated into comb ornament, with shifts between the groups 11/12, 5/6/7/8, and 9/13. To summarise, though there are other motifs, a large number of types 1c, 11 and 12 are decorated with ring-and-dot. Though such motifs are also popular on type 5 combs, the treatment is very different, and given that these combs were probably manufactured outside of Atlantic Scotland, the similarity is not meaningful. The

absence of ring-and-dot motifs on combs of types 6 and 7 is interesting, but the sample size is small. Nonetheless, the importance of incised line and geometric ornament on these types is notable, and may be indicative of an English/Irish industry that exploited simple decoration. Type 8a and 8b combs utilise more ornate variations of this pattern, and also incorporate ring and dot. Type 8c is undecorated, while type 9 and 13 combs are increasingly decorated with copper alloy rivets or plate, with simple ring-and-dot the only common incised motif. That said, there are exceptions, such as the highly ornate Skail comb. Evidence for regional variation in decoration was less forthcoming.

Within types, few observations may be made. On type 5 combs, however, the variety of arrangements of ring and dot motifs seen at sites such as Birka, is absent in Scotland, where a general conservatism is apparent. The chronological implications of this are unclear, and given the lack of large collections of combs from early Viking Age Norway, it is difficult to establish whether it relates to manufacturing tradition and/or 'consumer' choice in the British Isles or in western Scandinavia. Clarification is dependent upon an extensive study of combs from Viking Age contexts in Scandinavia.

Analyses of raw materials have also been informative. Thus, it has been demonstrated that type 11, 12 and 1c combs were probably made from both red deer and reindeer antler in northern Scotland, while in the west, they were exclusively of red deer antler and bone. Type 5 combs consist very largely of reindeer antler, while examples of types 6 and 7 are too few in number to provide meaningful results. Type 8 combs exploit red deer antler, though bone was also used. Types 9 and 13 seem to be characterised by the dominance of reindeer antler. However, there is a degree of uncertainty in all of this, as many combs were indeterminate.

Most interesting is the situation regarding type 11, 12 and 1c combs. Though many were recognised as probable reindeer, none from secure pre-Norse levels could be identified as such. Thus, this research cannot support the supposition that antler combs provide unequivocal evidence for Scandinavian contact in pre-ninth century Scotland. Rather, it seems that in general the pre-Viking period saw the use of local resources. However, the Orcadian deer population was clearly in decline (while there was no population in Shetland), and with the arrival of Scandinavian settlers and traders, 'native' comb forms began to be carved in reindeer antler. It is unclear whether this should be

seen as the work of Norse migrants, the indigenous population, or of new colonial identities. Nevertheless, the raw material results have important implications, and the issue will be discussed further in Chapter 9.

In the early Viking Age, alongside the 'native' forms (types 1c, 11, and 12), more typical 'Scandinavian' combs (type 5) were in use. The latter seem more likely to have been brought over from western Scandinavia than to have been manufactured locally, but the 'alternating edge' riveting practice seems to indicate a source for at least five combs somewhere other than the Trøndelag region. Indeed, the closest parallels can be found at Haithabu, and it may be that a number of Atlantic Scotland's first raiders, traders or settlers had spent some time in southern Scandinavia, or had traded with those that had (see Chapter 9).

Wherever these combs were made, the rarity of manufacturing waste in Viking Age Atlantic Scotland is notable, and it may be that following an initial phase in which 'Pictish' combmakers attempted to subsist through the use of imported materials, eventually the import of combs *per se* became the norm. In the north, this continued into the medieval period, when the hegemony of imported type 9 and 13 combs was absolute. In the Western Isles, the dominance of red deer antler in type 11, 8a, 8b, and 8c combs, coupled with the paucity of types 9 and 13, and the local manufacture of combs at Bornish, suggests a long-term self-sufficiency in combs. This pattern is not undermined by the presence of a small number of reindeer antler type 5 combs that surely represent the possessions of the first generation or so of Scandinavian migrants.

Given the paucity of debris deposits, it would be unwise to speculate on the nature of combmaking in much of Atlantic Scotland. Nonetheless, one is able to comment on variation in techniques of manufacture evidenced in the combs themselves. Riveting techniques in type 11 and 1c combs are highly variable, and suggest that their construction was not centralised, but carried out by individual craftsmen or workshops to their own specifications. It has been shown that type 5 combs display a similar range of techniques, but given that these show regional patterning in Scandinavia and eastern Europe, this seems likely to indicate a diversity of places of manufacture. It is difficult to comment on the small numbers of type 6, but comb types 7, 8a, 8b, 8c, though also few in numbers, display more consistent riveting. The dominant 'alternating edge'

arrangement contrasts with the techniques employed at Trondheim and Birka, and has much more in common with combs from northern England, southern Scandinavia, and Ireland.

The quality of type 5 combs is comparable to that seen in Trøndelag and at Birka, though combs of very high quality are absent in Atlantic Scotland. Based on a survey of published literature, other Scandinavian centres such as Ribe, Haithabu and Novgorod compare similarly with the corpus from Atlantic Scotland. This pattern surely supports the proposal (see above) that type 5 combs reached the British Isles via travel (and possibly gift exchange).

Use wear is not markedly different from the situation in England, but some interesting internal patterning was noted. In particular, combs from graves appear to display anomalously low levels of use wear. High levels of wear in type 13 combs found in western Scotland may suggest that the region was no longer in close contact with Scandinavian markets. Similarly, evidence for repair on combs of a number of types may relate to regional variation in degree of access to combmakers.

These issues must be subjected to further scrutiny. In Chapter 9 they will be systematically addressed, and placed within their cultural and political context, so that they can be brought together and used to illuminate the dynamics of early medieval Scotland.

## Chapter 9: Discussion

### 9.1 Introduction

In this chapter, the findings of the above analyses will be systematically discussed, allowing attention to be paid to the broader implications of these results. In detail, the synchronic and diachronic variation highlighted in chapters 7 and 8 will be considered within their social, political, and economic context. Patterning will then be interpreted in accordance with the approaches to style and identity discussed in Chapter 3 (see Barth 1969; Bourdieu 1977; Weissner 1983; Giddens 1984; Jones 1997).

The production and distribution of combs will be discussed in section 9.2, and the consumption and disposal of combs are the foci of section 9.3. In section 9.4, the role of combs in the construction of identity is explicitly discussed, and biographies are written for a number of individual combs in section 9.5. The findings will then be summarised, before the place of this research in the wider context of Viking studies is assessed (section 9.6).

### 9.2 The combmaking industry

Much ink has been spent discussing the degree of sedentism that one may confer on the combmaker in a given period, and whether the scale of evidence for combmaking allows the craft to be considered an industry. It has been shown above that the archaeological evidence cannot be used to definitively support or refute the various proposed models, and that these preoccupations have hindered other discussions. In particular, they have led to a fixation on production, such that combs have rarely been seen as objects that may be actively consumed, or as material culture capable of experiencing meaningful biographies. It is hoped that this thesis will go some way to balancing this disparity. However, the research has nonetheless thrown up patterning that might elucidate discussions of the production phase, and some comments are thus appropriate. In detail, this thesis and previous research have attempted to address the following questions:

- Was combmaking an industry, or a handicraft (see Glossary for definitions)?

- Were raw materials collected by the combmaker, or acquired through some exchange mechanism?
- How specialised was the process of manufacture, and was it carried out solely by professionals, by home-based amateurs, or a combination of both? Were the artisans involved full-time specialists, or did they dabble in other crafts, or perhaps agriculture?
- Were they settled, working in permanent workshops, or itinerant, and were they involved in the distribution of combs, either to middlemen, or to consumers direct?
- How systematised was manufacture, and was the whole process from raw material collection to primary chopping, assembly and decoration carried out by a single craftsman, or was there a complex articulation of several specialists?

These are complex issues, and no doubt there was a certain degree of variation with region and socio-political context, but it may be possible to answer some of these questions for our spatio-temporal zones of interest. Herein, the primary focus is the Viking Age, though the pre-Viking period is also considered. It is much more difficult to assess the medieval situation, as there is a paucity of manufacturing evidence in both northern England and Atlantic Scotland.

This survey has taken in little manufacturing evidence from the pre-Viking period, but there are important collections from Fishergate and Blue Bridge Lane, York. The deposits are small, but need not indicate itinerancy. The combs themselves certainly show evidence of specialist manufacture, but there is little sign of systematic production; as riveting method does vary. The repertoires of northern England, western Scotland, and northern Scotland seem to represent discrete traditions, but show enough similarities to be suggestive of some level of contact between combmakers or consumers. The status of the pre-Viking combmaker thus remains ambiguous, and will only be illuminated by broader studies of combs and waste deposits from across England and Scotland (taking in sites from Saxon Southampton and London, as well as York).

Turning to the Viking Age, there are logical reasons to doubt the itinerancy model (see chapter 2), but herein the focus will be on the material culture evidence from northern England and (where present) Atlantic Scotland. In northern England, one might

generalise, and state that the combs produced in large centres such as Coppergate, York, show cosmopolitan influence; perhaps greater than evident at celebrated sites such as Birka. In contrast, the comb repertoires of smaller settlements such as Cottam, and even those widely considered to be high status (such as Flixborough) are conservative<sup>1</sup>.

Combs with high quality ornament are much more common in Viking Age levels at large settlements like York and Lincoln than at small settlements such as Cottam and Wharram. This disparity may simply reflect a difference in purchasing power between the inhabitants of larger and smaller settlements, but it seems improbable that the poorly decorated combs were fashioned by the same manufacturers as the higher quality examples. Thus, it seems most likely that comb manufacture was a relatively widespread phenomenon, carried out by a range of individuals, to a range of standards. This is supported by the wide distribution of evidence for comb manufacture/ bone and antler working in York and Lincoln. While comb construction may have presented little difficulty for many workers, decoration was a different matter, often requiring specialist tools and skills. It is possible that a certain amount of comb manufacture took place outside of the large centres, but this must remain tentative, as manufacturing waste from small settlements in England is yet to be recovered. Thus, if it took place, rural manufacture was probably on a relatively small-scale, and something less than a full-time occupation.

In the case of Scotland, though the evidence for combmaking is sparse, that does not equate to proof of an itinerant mode of production. Rather, it simply represents a lack of evidence, and as such it is problematic to argue that it supports either case. Moreover, to propose the existence of an itinerant mode of production in marginal areas such as the Hebrides, amounts to special pleading. Small waste deposits and blanks are known from pre-Viking levels at Buiston crannog (Ayrshire) and Bostadh (Western Isles), and probable Viking Age contexts at Castle O' Snusgar (Orkney). This is not a sufficient dataset on which to base interpretations of the combmaking in Scotland.

Interestingly, no clear chronological patterning is visible in the method or quality of manufacture of combs at pre-Viking and Viking Age sites in England. The larger waste

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<sup>1</sup> It is unlikely that the Flixborough combs were actually made onsite, but they nonetheless contrast with the corpora from York and Lincoln, so irrespective of their place of manufacture, the point is the same.

deposits in Viking Age levels at York might not necessarily indicate industrial intensification, but the trend away from the use of bone must relate to increasingly reliable sources of antler. Otherwise, there is little evidence for any change in the organisation of the craft between the eighth and tenth centuries.

However, in the late Viking Age and medieval period there is evidence for a certain degree of systemisation and mass production. In Scandinavia, type 9 and 13 combs were manufactured, increasingly to a standard template, and some examples were probably imported to northern Scotland. Similarly, in the Western Isles and Ireland type 8a, 8b, and 8c combs may have been produced in large numbers. In England, the situation is unclear between the twelfth and fourteenth centuries, but the paucity of finds dateable to this period suggests that combmakers ceased to practice, scaled down their work, or expanded into other objects and (perishable) materials. However, bone and ivory 'nit combs' (type 14b) appear in the fourteenth century, and become increasingly important. They arguably evidence a relatively large-scale industrial enterprise, perhaps akin to the manufacture of type 9 and 13 composite combs in late tenth to fourteenth-century Scandinavia.

It can thus be seen that the organisation of the combmaking craft developed along discrete regional trajectories. The reasons for the different situations in Scandinavia and England may be partially social or political, rather than simply economic, and will thus be discussed below. However, having reviewed the overall development of combmaking in outline, it is now appropriate to focus on a more limited, controlled dataset, considering several possible scenarios and the material remains that one might expect to characterise each model. A comparison of the nature of the actual evidence with each model should foster a more reliable indication of the nature of combmaking in the British Isles.

Three basic models might be proposed:

- 1) the *Factory* Model; a small number of large, long-lived mass producing centres, with a high degree of specialisation
- 2) the *Workshop* Model; an intermediate number of settled, if not necessarily permanent, workshops

- 3) the *Itinerancy* Model; an intermediate number of small, short-lived, probably seasonal occupations of possibly temporary buildings
- 4) the *Homebased* Model; a large number of part-time or occasional combmakers, with no real degree of continuity

Of course, it is unlikely that any one of these models fully describes the situation in any particular spatio-temporal context, and our evidence is likely to reflect a combination of several of these situations. The situation must have changed through time, and one might perceive a less-organised 'handicraft' phase in the Middle Saxon period, developing and intensifying into an eventual 'factory' situation in the later medieval period. The major area of contention, then, is the Viking Age.

If one first considers the situation in England, there is evidence for comb manufacture in association with permanent buildings at Coppergate. These deposits are smaller than those known from Haithabu and Ribe, but are nonetheless substantial. Moreover, given the problems of disposal and preservation already discussed, it is unsound to base theories on the quantity of waste recovered. More enlightening evidence probably stems from the nature of the waste, and of the combs themselves.

Identified raw materials in both combs and waste from England are entirely red deer, and the antlers from York seem to be from 'British', rather than continental stock. Moreover, there is a suggestion of an organised supply network. This might be taken to indicate the actions of a well-established, settled craft. Styles of form and ornament, while loosely based on Scandinavian precedents, display a genuine British signature, in the importance of types 4 and 7, and in the relatively limited range and debased standard of ornament. Moreover, manufacturing methods (riveting materials and techniques) differ from those seen on the continent.

Thus, with reference to table 9.1, it is not possible to distinguish between the 'itinerancy' and 'workshop' models on the basis of structural remains, and waste quantities are undiagnostic. The homogeneity of raw materials at the Danelaw sites points towards a 'workshop' situation, though in isolation this evidence is equivocal. Quality of manufacture is equally redundant in separating these two models, but the presence of

local design variants, coupled with evidence for conservative and locally distinctive methods of manufacture, may be taken as further support for the 'workshop' situation.

All in all, it seems difficult to reconcile the English evidence with the actions of itinerant craftsmen travelling from Scandinavia. If combmakers did travel, then it was on a subregional level, perhaps moving between York and Lincoln, but probably over much shorter distances in the main. Perhaps the most remarkable characteristic of combmaking in Viking Age England is its consistency in raw material exploitation. The vast majority of combs and waste from northern England demonstrate the use of antler, and evidence for the use of species other than red deer was unforthcoming. Indeed, other than type 4 riveted mounts (invariably cut from split ribs), the only significant use of bone is in the collection from Flaxengate, Lincoln, in which metapodials seem to have been used in the production of billets (Mann 1982: 7-8; fig. 5.8).

The paucity of manufacturing waste in Scotland makes it difficult to make a clear assessment of the situation, but some patterns are notable. In the pre-Viking period, raw materials were clearly local in western Scotland, while the situation in the north is ambiguous. The small scale and high level of craftsmanship involved in this operation are suggestive of the actions of a small number of highly skilled artisans, but it is difficult to assess their level of movement.

Into this context came Scandinavian settlers, and though the first combs to arrive were probably carried over by the first wave of immigrants, one cannot exclude the possibility of local manufacture in later years. Local variants are not as apparent as in the northern England corpus, though the slightly inferior standard of production (relative to that of Scandinavia) is notable. It seems possible that itinerant craftsmen *were* active in Viking Age Scotland, perhaps moving from island to island, making and repairing combs, and producing very little waste. However, if this was the case, then it seems unlikely that a living could be made off the production of such a small number of items, and the combmaker may have had another specialism, such as the production of pins.

Conversely, given the possibility of their use in gift exchange, and the necessity of importing raw materials for their manufacture, combs may have been a very desirable, costly, and exclusive item in Viking Age Scotland, thus allowing the combmaker to limit

his/her output to a small number of items. Either way, there is little evidence for the large-scale production of combs in Viking Age Atlantic Scotland.

The alternative to unevidenced, small-scale local production is that combs were imported from Viking Age towns. This seems possible, given that other items found in the British Isles, such as oval brooches, were manufactured there (*e.g.* Bencard *et al.* 2004). While 'Irish' types 8a and 8b were important in tenth-century western Scotland, type 6 and 7 combs are not present in numbers in any region. Thus, the only real evidence for the import of combs from Scandinavia comes from type 9. It is thus difficult to characterise the combs used in northern Scotland in the mid-tenth century (that is, between types 5 and 9). It may well be that a combination of types 6 and 8 were used, but the paucity of examples suggest that such combs were still used by a restricted group of consumers.

However, from the late tenth or eleventh centuries, the north of Scotland experienced an influx of finely made, though uniform, combs from Norway. In contrast, the west was served by centres of manufacture in the Irish Sea area, and perhaps within Ireland itself. All in all, it is clear that Scottish comb production between c.AD 500 and 1500 was a complex, dynamic process. The development may be summarised thus:

- An *initial phase* (c.AD500-850), involving small scale manufacture of 'Pictish' combs (one may see the makers of certain type 1c and 11a combs as artists in the true sense, rather than jobbing craftsmen).
- A *secondary phase* (c.AD850-950), in which 'native' style combs continued to be produced, though in the north of Scotland raw materials were acquired via Scandinavian contacts. Scandinavian settlers brought their own distinctive combs with them.
- A *tertiary phase* (c.AD950-1100) in which combs may have begun to be manufactured locally, but were more likely imported from Scandinavia (especially type 9). The presence of types 7 and 8 are indicative of contact with the Irish Sea region and/or England.
- A *final phase* (c.AD1100-1400), in which it seems that combs were produced *en masse* in Scandinavian 'factories'. Though the north of Scotland was clearly an important part of this Scandinavian economic system, few exports reached the Western Isles, which by now was largely incorporated into an Irish Sea cultural, economic, and political milieu.

The apparent lack of wear on combs from pagan graves in Atlantic Scotland may also be significant. Should one assume that such combs were curated unused for long periods of time prior to disposal in a grave, or that combmakers were readily accessible at a moment's notice (and therefore probably not itinerant on anything but the most local of scales)? The lack of evidence for comb manufacture in Viking Age Scotland militates against the latter situation, while the former dovetails nicely with the possibility of certain combs being used in life, and others in death (see below). At present, it is impossible to choose between these two scenarios, and one must also consider the possibility that these combs *were* used, if not extensively so. Such a situation might simply reflect the interment of the best quality comb in a household, one that was little used. Experimental investigation is necessary to demonstrate the rate at which comb teeth begin to bead (Ashby and Glazzard forthcoming).

The status of the combmaker is equally unclear, and it no doubt varied with temporal context. In the pre-Viking period, a number could perhaps be described as 'master craftsmen'. Such highly skilled artisans may have worked for local potentates on a permanent or *ad hoc* basis. However, by the Viking Age the situation may have changed, as although there is some degree of individual variation in comb form and ornament at sites such as Birka, in general terms the material from northern England and Atlantic Scotland is more standardised. In contrast to decorative metalwork and sculpture, the lack of art historically established styles (*e.g.* Borre, Jellinge, Mammen, Ringerike, Urnes) on combs suggests that metalwork was done by artists, while combs were made by less-skilled craftsmen. It is certainly possible to work to such intricacy on bone and antler, so this pattern suggests either ignorance of such conventions, or the view that they were inappropriate for use on combs. Comb standardisation was certainly well underway by the twelfth century, and though unusual commissions were still produced (*e.g.* the Skail comb), these became fewer and fewer as time went on, with type 13 combs simply produced to a limited range of templates.

To summarise, the assumption that the comb corpus of Viking Age Europe is uniform has been questioned, such that Ambrosiani's model may not be easily applied to the British Isles. A range of comb forms were current in pre-Viking England and Scotland, and while there is certainly similarity in the 'typical' combs of the early Viking Age (*ie* type

5), this may be explained as a result of the ninth century diaspora. In the tenth and eleventh centuries, by which time Scandinavian settlement was better established in England and Scotland, combmakers seem to have been settled or *locally* itinerant, and their products accordingly show signs of regional variability. The industry seems to have been reorganised in the medieval period, as Atlantic Scotland was served by trade with Scandinavia and the Irish Sea, while in England the craft of antler-working went into decline.

## 9.3 Combs, settlement, and economy

### 9.3.1 Northern England

Some of the patterning identified in chapter 7 is worthy of discussion herein, for consideration in stylistic and 'ethnic' terms. Contrary to expectations, it was patterning at the *type* level that proved most informative, and this is the focus of discussion here, though allusion will also be made to important variation in discrete attributes.

Though present on the continent, it was shown that types 1b, 2a, 2b, 3 and 12 have a long history of use in Anglo-Saxon England. Type 3 may well have been developed in the British Isles, but type 1b, 2a, 2b, and 12 arrived fully formed with, or soon after the first Anglo-Saxon migrations. The gradual development and (in the case of type 12) debasement of form and ornament over the next three centuries are such that none of these combs can be seen as 'displaced' examples, or indicative of contact with people from overseas. Moreover, the absence of examples of types 1c or 11 might suggest that contact with the Irish Sea region was minimal, despite well-evidenced contacts in the preceding and following centuries. In general, one may perceive remarkable similarity and conservatism in raw materials and manufacturing techniques, such that there is no need to postulate the presence of foreign combmakers. The sample thus provides a useful control against which to compare data from the Viking Age and medieval periods.

A few key trends are apparent from the combs dateable to the Viking Age. First, many sites show evidence for continuity between the eighth and ninth centuries. This is in accordance with other archaeological studies, in which 'Anglian' material culture persists; the first Scandinavian arrivals seem to have made little direct impression on the material

culture of ninth-century England, whatever their social impact. There are also hints of possible continuity into the 10<sup>th</sup> century, especially at small settlements. This may be indicative of the deliberate expression of a 'native' identity, or may simply reflect exclusion from the markets typified by material at Lincoln and York.

Given the lack of evidence for comb manufacture at sites such as Flixborough, if types 2a, 2b, and 12 genuinely persisted into the tenth century, it is unclear which markets their owners patronised. Given the dominance of antler over bone at the site, it seems that combmakers made all combs according to local traditions and raw material availability, and large-scale changes in raw material exploitation took place irrespective of comb type. (Foreman in press)<sup>2</sup>. Thus, the Flixborough corpus either represents the manufacture of 'Anglian' style combs in the Viking Age, using 'Viking Age' raw materials, or an unusual material choice in the pre-Viking period. In the former case, the combmaker may have been persisting in the manufacture of types that were considered outdated elsewhere, but he/she was nonetheless aware of current trends in raw material use (or else affected by the same constraints). In the latter, wherever the Flixborough combs were made, one might argue that the combmaker had unusually easy access to antler, as they felt no need to supplement it with bone, and this might be the first, indirect indication of manufacture in small settlements in close contact with the countryside. Given that residuality at the site is potentially high, it is difficult to decide between the two options.

Elsewhere, the tenth century saw a reforging of the comb repertoire; type 6 was introduced - perhaps from Denmark - and was rapidly adopted, while one may also perceive the arrival of types 7, 8a and 8b, perhaps from Ireland. Such combs may have been copied by combmakers working in northern England, but it is tempting to associate the first examples with the arrival of the 'Dublin Norse'. In later years, one also sees the appearance of type 8c, and the template for this form, if not the combs themselves, no doubt also came from Ireland. Though the numbers of type 8a-c combs are not great, they are relatively widespread (outside of the present sample they are known from southern England). This contrasts markedly with type 11 (the previous identifiably 'Irish'

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<sup>2</sup> We may have some confidence in these identifications, as the analyst has some experience in the analysis of bone and antler artefacts (see Foreman 1991; Foreman 1992; Drinkall and Foreman 1998).

form), which is absent from the northern England sample<sup>3</sup>. One might just suggest that the level of contact between Ireland and northern England (or at least north-eastern England) was correspondingly greater in the tenth to thirteenth centuries than it was in the eighth and ninth. If type 11 developed in Ireland out of type 10, then there must have been contact across the Irish Sea sometime around the late 3<sup>rd</sup> or 4<sup>th</sup> century, but the combs provide little evidence for such travel or trade in the following centuries. A survey of 'Dark Age' material from Wales (*e.g.* Alcock 1963) may be key to addressing this issue, but this thesis is not the place for such a study.

In addition to the presence of type 8a-c combs, one might note important differences from Scandinavian collections. Type 4 seems restricted to the British Isles, and England in particular, while type 14a is not important in northern England, with no examples of Scandinavian manufacture identified. Similarly, combs of type 9, large numbers of which were present in the late tenth and eleventh centuries across Scandinavia, are very poorly represented in northern England, even at large settlements like York. This patterning seems indicative of a severing of direct contact with Scandinavia in the late Viking Age, and is potentially informative in terms of identity. The stylistic associations of the above types are discussed in more detail below.

From the twelfth century onward, one may note a general paucity of combs in northern England. There are few combs from medieval-dated contexts at settlements such as York<sup>4</sup>, and it is notable that types such as 8c are under-represented relative to earlier forms. This is an interesting phenomenon, and is worth consideration in relation to a pattern noted in David Hinton's research on decorative metalwork (Hinton 2005: 171). Hinton suggests that a severe drop-off in the numbers of decorative brooches and other dress accessories produced and discarded in the eleventh century relative to the tenth relates to a change in attitude regarding the display of status (see below).

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<sup>3</sup> An outlier was found at Victoria Cave, Settle (Swanton 1966; MacGregor 1985: 94) but is not recorded in the present corpus.

<sup>4</sup> There are 56 combs from phase 6 at Coppergate, but of these only 10 are classified as large fragments or entire combs, and no doubt many examples are residual. Furthermore, this number is rather small considering the longevity of the phase (11<sup>th</sup> to 16<sup>th</sup> century).

However, Hinton argues that dress accessories experienced a return to prominence in the late twelfth and thirteenth centuries, but this pattern is not apparent in the combs, which remain scarce until the fourteenth century. Thus, comb frequency is better explained in its own terms. The pattern may be largely functional, as increasingly restrictive forest laws cut off access to antler (whether shed or butchered), effectively rendering composite comb production untenable (MacGregor 1985: 32; see also Sykes 2005). It seems unlikely that personal grooming came to be seen as unnecessary, and combs may have been made in perishable materials such as horn or boxwood.

Alternatively, the decline of composite combs might have been borne out of changing perceptions of the 'meaningful' role of combs. We have seen that hair and personal grooming held particular mystical or symbolic significance in the pre-Viking period and Viking Age. Much of this significance was no doubt bound up with pagan belief (see Riddler 1998), and the coming of Christianity may have had a negative effect on the popularity of combs as high status goods<sup>5</sup>. There are few references in medieval texts to the act of hair combing, and the arrival of the Norman aristocracy, who perhaps had no comparable 'symbolic grooming' tradition, may have killed them off. The absence of any representations of combs on the Bayeux Tapestry (Wilson 1985) is striking, and informative as to Norman<sup>6</sup> attitudes to dress accessories. Furthermore, if combs originally had an important role in the maintenance of reciprocal relationships, then their popularity may have waned in the face of the increasingly commercial nature of medieval exchange.

### 9.3.2 Atlantic Scotland

A comparison of the results outlined in chapters 7 and 8 demonstrates a number of patterns that may allow one to consider the role of combs in making and shaping identities. For example, it is interesting that in Ireland and western Scotland, the template

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<sup>5</sup> There are possible Christian associations, but the legitimacy of 'liturgical' combs is unconfirmed; if they had such a role, the nature of this is unclear, and was insufficiently important to merit many documentary references.

<sup>6</sup> The Bayeux tapestry may have been produced by English workers, but was certainly commissioned, and probably designed by the Norman elite. It has recently been argued that the objects depicted in the tapestry reflect artistic conventions rather than contemporary 'reality' (Lewis 2005), but this does not detract from the significance of the absent combs.

from the late Roman double-sided form 10 was developed into type 11, but that no such development occurred in England. Instead, here type 1a may have developed into 1b. 1b itself was then further reinvented as 1c in northern Scotland. Some disparity between England and Scotland is perhaps to be expected, but one may ask why we see this level of difference. The patterns may be best explained in terms of social, economic, or political processes, and may thus inform our understanding of these dynamics.

One must assume that there was contact between Anglo-Saxon Northumbria and southern 'Pictland'. The rarity of combs across much of mainland Scotland is probably a largely taphonomic pattern, given the wide distribution of symbol stones featuring depictions of combs (fig. 9.1). The combs from northern England and northern Scotland thus represent opposite ends of a continuum of contact, and one might expect certain disparities (such as variations in ornament) to be present. Nonetheless, the absence of types 2a, 2b and 3 from the Scottish corpus is striking. Though it is difficult to argue from negative evidence, one can only assume that contact between the 'Anglo-Saxons' and the 'southern Picts', or between the 'southern' and 'northern Picts', was not mediated through combs of these types.

The dominant combs of Atlantic Scotland during the eighth century were types 1c, 11, and 12. The concentration of type 12 in the north is striking. As Smith has suggested, the close relationship between type 12 combs in Scotland and England is indicative of some level of contact, though there is sufficient distinction to assume that they were made by different artisans. The shared manufacturing traditions (in particular, the use of iron rivets set at alternating billet edges) are unsurprising if the combs had a common template, but the subtle differences in terms of ornament may be indicative of divergent local fashions. Thus, it seems unlikely that many of these combs arrived in Atlantic Scotland as exports from England, rather that they shared a common template. Type 12 combs are known in England from as early as the sixth century (West 1985: 14-15; MacGregor 1985: 92-94), so it seems clear that the form travelled north to Scotland, where it was reinterpreted. The medium by which the initial transferral took place may well have been missionary contact and the relationship between the churches of Northumbria and Pictland. Such contact is well documented in the similarities between Northumbrian manuscript ornament and Pictish sculpture (see Smith 2000: 181), even if the combs themselves are under-represented in mainland Scotland.

The development of type 11 from type 10 seems to have been region-specific. In Ireland and the Western Isles, there was a market for highly ornate double-sided combs that represented considerable investment in skills and time; perhaps combs already had an important role to play in gift exchange. The type was then independently introduced into northern Scotland from the Irish Sea region, perhaps via the same mechanism. The Scottish chronology is weak, and the date at which this took place is unclear, occurring any time between the fifth and seventh centuries. In isolation, they do not indicate the presence of an 'Irish' population, but this should be considered as a possibility, particularly in the light of other evidence for such a presence (*e.g.* Forsyth 1995). Thus, in all the combs suggest that the peoples of northern Scotland were in contact with both the Irish Sea region and Anglo-Saxon England. Taken as a group, the corpus is a unique collection, representing the nexus of these different influences, and provides a complex backdrop against which to discuss Viking Age combs.

To begin with the earliest Viking Age combs, examples of type 5 are known from both the Northern and Western Isles, though they seem more common in the former. Type 6 and 7, however, are infrequent finds in all areas, and where present, may indicate contact with an Anglo-Scandinavian or Hiberno-Norse milieu. Type 4 combs are totally absent. Type 8a and 8b combs are important in tenth to twelfth-century contexts, and later in the west. They dominate utterly at sites like Bornais and Kilpheder, and demonstrate the importance of the Irish Sea for the exchange of ideas and/or objects. From the eleventh century onwards type 9 combs, presumably imported from Norway, began to dominate in the north, and they continued to do so until the advent of type 13 in the twelfth to thirteenth centuries. Both types 9 and 13 are poorly represented in the west; one might suggest that by this point Argyll and the Hebrides were cut off from Scandinavian networks, instead becoming increasingly integrated into an Irish Sea trading province that united Ireland and western England and Scotland.

Thus, the number of type 5 combs scattered around Atlantic Scotland is indicative of contact with Scandinavia, probably from sometime in the ninth century, and a Scandinavian presence; probably settlement, in all areas shortly afterwards. The presence of a small number of type 5 combs in the Hebrides may present evidence for an otherwise under-represented early Viking Age in western Scotland. Parker-Pearson and Sharples

have argued that the Hebrides genuinely lacked Scandinavian settlement prior to the mid-tenth century, and that native settlements remained occupied until this point (Parker Pearson *et al.* 2004b: 129) However, given these comb finds, together with the number of furnished burials (which date to between AD 850 and 950), such a position is untenable. Indeed, it is more likely that the pattern is simply related to the greater visibility of late Viking Age and medieval sites, given that the farm mound deposits of the latter period tend to be much thicker and more substantial than do early Viking Age levels (J. Barrett *pers comm.*).

Comb use in the medieval period is itself of some interest, particularly in the west. At Bornais and Kilpheder in particular, the iron riveted type 8 comb dominates in the eleventh to thirteenth centuries. This is interesting, and may be suggestive of connections with Ireland and western England. It is notable that very few combs from Dublin are secured with copper alloy rivets even in the medieval period, and type 8 combs are best seen as a true Hiberno-Norse phenomenon. Given the quantities evidenced in South Uist, they cannot have been restricted to people of status, and simply represent an early 2<sup>nd</sup> millennium fashion in the Irish Sea province, and beyond.

In the Northern Isles, the value of the analysis lies not in the demonstration of a ninth-century Norse presence, but rather in the rebuttal of evidence for eighth century pan-North Sea trade, and in elucidating the nature of culture contact when it did commence. There is little clear evidence (other than at Pool) for the coexistence of types 11, 12, 1c and 5. Nonetheless, the use of probable reindeer antler in a number of combs of types 12 and 1c, and the fact that they cannot be indisputably assigned to pre-ninth century contexts, is most easily explained if they were manufactured and used in the Viking Age. Thus, some element of continuity seems certain.

To recap, type 11 combs tend to be manufactured from red deer antler. Type 12 combs, in contrast, may be made of either red deer or reindeer antler. There no longer seems to be any reason to suggest that this difference has a chronological basis, and it seems more likely to reflect differing working traditions. Thus, it is possible that most type 11s were actually *made* in Ireland or the west, that they were manufactured by travelling craftsmen bringing their own raw materials, or that red deer antler was imported from the west. The first option seems intuitively most likely. The variety of riveting techniques used in their

manufacture is suggestive of a number of craftsmen working with no fixed tradition; perhaps at this point they worked principally on individual commissions for powerful magnates.

As those type 12 combs exploiting *R. tarandus* can no longer be taken as evidence for pre-Viking Age contact, the manufacture of a 'native' form in Scandinavian materials demands explanation. Conceivably, Scandinavian settlers required combs in the local style, or perhaps 'native' Picts wanted their traditional combs, but needed to negotiate for foreign materials in order to buy them. At root, this question concerns the relationship between types 11/12 and 5. Was the popular change from the former to the latter a chronological development, or does it represent a cultural or social distinction? To distinguish between the two, we are reliant upon Jarlshof and Pool. Taking the date for the start of Norse settlement at Jarlshof as tenth century (based on a ringed pin), rather than Hamilton's 800 AD date, (which was based on the Shetelig axiom), it is interesting that type 12 combs are absent, but that there are ten fragments of type 5 combs. Perhaps type 5 had an extended currency in Shetland, or northern Scotland as a whole.

More interestingly, the absence of type 12 suggests that if the two forms were contemporary at any time, it was only during the ninth century. Evidence for this overlap period exists in the interface phase at Pool, though it is interesting that type 5 combs were not found at contemporary Buckquoy. Thus, though there is clearly a chronological component to the distinction, it is the interface phase that is of most interest. How was the contemporaneous use of two distinct forms of comb - presumably with very different social associations - negotiated? One might posit two possible situations:

The first might be termed 'factionalism'. The combs may reflect two separate communities (conceivably, though not necessarily *native* and *incomer*, or *Christian* and *Pagan*), each using their own distinctive forms of comb. In this case, combs played an important role in the creation of identity. This situation has been suggested by James Barrett (Barrett *et al.* 2000b), though this argument rather relies upon the ninth-century text, *The Life of St. Findan* (Omand 1986; Thomson 1986). If such factionalism was manifested geographically, any such patterning is now lost (fig. 9.2). This is perhaps not surprising, given that combs are portable items, and that our chronological resolution is poor.

An alternative model sees the two forms of combs not as having direct associations with ethnic or social groups, but as having different social roles; that is to say that they were consumed in different arenas. In this model, the same people may have used both types 5 and 12, conceivably for different purposes. For instance, type 12 may have been used as everyday combs, while type 5 were kept for special purposes. In particular, the frequency of type 5 combs in Scotland's pagan graves draws one to the possibility of their curation for disposal as grave goods. This theory has some merit, particularly given the apparent lack of wear on grave combs, but if this was occurring, it was not their only use. Indeed, there are a number of type 5 combs from settlement deposits, and these frequently show evidence of wear (fig. 9.3). With the possible exception of Newark Bay, type 12 combs are absent from the graves of Atlantic Scotland, but unfortunately, the small sample sizes confound significance testing of the findspots of types 5 and 12. Thus, the question must remain open. The simplest solution, however, is probably one of factionalism in its broadest sense.

If, then, one assumes that the two forms of combs persisted alongside one another for some time, perhaps serving different groups (whether they be defined in terms of ethnicity, status, gender, or even age), how was this effected? Can we ever really know which levels of identity were being negotiated? These issues will be discussed below.

In broader terms, one thing that stands out is the independence of the Scottish corpus from that of northern England. The absence of types 2a-b, 3 and 4 is highly suggestive, and one might wonder as to the extent of north-south traffic overland and in the North Sea. It may be the case that Scandinavia cut off Orkney's contact with southern England, and perhaps even Frisia. However, type 12 *is* well evidenced in both regions, and one must postulate a different reason for the absence of types 2a-b, 3 and 4. The difference does not seem to be chronologically significant, and is more likely to be indicative of the symbolic associations of particular comb forms, or the social groups that used such types.

One should note that the situation is different in southern mainland Scotland. Type 5s in the south-east border area indicate an early Scandinavian presence that probably relates little to the Norwegian hegemony in the north. Instead, it is probably better associated with the Scandinavian presence in either Northumbria or Strathclyde. Moreover, it is

likely that there was extensive contact and interaction between the peoples of the various kingdoms of northern England and southern Scotland.

In all, the combs from the Viking Age demonstrate the existence of complex and changeable webs of contact around the North Atlantic, North Sea, and Irish Sea regions. The study complements other archaeological and documentary evidence for the centrality of Atlantic Scotland to Norse trade and travel around the end of the first millennium AD. Indeed, western Scotland and Ireland have been seen as 'stopping off' points on the sea road to Iceland, while the Northern Isles are popularly characterised as a 'crossroads' between north and west (*e.g.* Muir 2005: introduction). The combs from western Scotland are suggestive of some dislocation in relations with Scandinavia, superceded by a tight, integrated network of Irish Sea contacts that must have been equally, if not more lucrative. Combs from the north demonstrate trade or travel connections with Norway, Anglo-Saxon England, and the Irish Sea area. Thus, the position of the Northern Isles within a busy North Sea 'shipping lane' is reaffirmed.

The combs from medieval Atlantic Scotland are a mixture of types 8, 9, and 13. In the west, the corpus is dominated by type 8 (particularly 8a and 8b), while there is evidence for manufacture at Bornais. In the north, types 9 and 13 seem most likely to have been imported from Norway, while examples of type 8 may be either local productions (for which we have very little evidence), or combs displaced (by trade or travel) from Ireland and the Hebrides. The use of red deer is perhaps suggestive of the latter, unless new trading networks had made red deer antler available in the Northern Isles. Manufacturing methods in type 8 are suggestive of organised production, with the consistent use of 'alternating edge' riveting. Most type 9 and 13 combs have 'decorative' riveting, and subtle differences in methods of manufacture are difficult to detect. In this thesis, no attempt has been made to recognise individual combmakers; similarity in terms of form, ornament and manufacturing methods are taken simply as evidence of systematised production on a large scale, in which many craftworkers had comparable skills and tools.

Thus, the combs are indicative of differing networks of contact, organised along northern and western axes (**fig. 9.4**). This is interesting, as it is suggestive of closer links between political and economic geography than one might expect. The Western Isles, while having a complex and dynamic political history, were at least ruled locally (from Man) for long

periods. The Northern Isles continued in Scandinavian overlordship until 1468, and, more importantly, direct contact with Norway seems to have been maintained for much of this period (Fenton 1997; Thomson 2001). The continued relationship with Scandinavia, demonstrated through both political history and combs, contrasts with findings from recent studies of steatite distribution (Forster 2005), which suggested a gradual reduction in dependence on Norwegian supplies between AD 800 and 1500. It thus seems that the steatite pattern is more closely related to the proximity of a good steatite source in Shetland, than with a disarticulation of contacts with Scandinavia. Indeed, the suggested persistence of Norwegian contacts goes some way to explaining the profusion of (probably late) Scandinavian place names in the Northern Isles, as well as the suggestion of considerable Scandinavian influence on the Orcadian gene pool (Helgason *et al.* 2001; Goodacre *et al.* 2005).

The ubiquity of type 9 and 13 combs in medieval Orkney are suggestive of the fundamental 'Scandinavianness' of the islands' population; that is to say that it had been fully absorbed into a Scandinavian cultural milieu. This is evidenced at mid-status sites like Quooygrew, as well as towards the higher end of the socioeconomic spectrum (Barrett forthcoming). Moreover, evidence comes not just from the material culture of artefacts and architecture, but also from the Norse literary tradition (sagas), and the onomastic record (Crawford 1995).

In contrast, the Western Isles seem to be well absorbed into an Irish Sea cultural environment. Though type 9 and 13 combs are known, they are sufficiently uncommon to be seen as the products of isolated incidents relating to trade and travel. In contrast, the quantities of type 8 combs are considerable, though it has to be said that the majority come from the recently excavated sites at Kilpheder and Bornais. This in itself is interesting, as Kilpheder, though certainly not of low status, was not as important a site as Bornais, yet both are dominated by type 8 combs. Moreover, riveting techniques ('alternating edge') and raw materials (probable red deer antler) align more closely with English patterns than Scandinavian, and are thus probably also consistent with local manufacture. Such was the prevalence of this Hiberno-Norse material culture that combs that related to the 'Viking' past may have been curated, as pendants. They were presumably retained for their curiosity value or social and symbolic associations now unclear (see below).

Moreover, type 8a and 8b combs acquired an extended currency in the region, being used on South Uist until at least the thirteenth century. It seems that the island's lack of contact with Scandinavia in later years caused them to continue to manufacture type 8 combs after England had neglected composite combs altogether, and the Northern Isles had taken up types 9 and 13. Limited access to Scandinavian resources is suggested by a small number of type 13 combs; an example from the Udal is fixed with iron rivets, and may thus represent a locally produced imitation. Whether Uist's insularity is merely a local tradition, or reflects a more widespread Irish Sea pattern cannot yet be determined, as few other medieval Hebridean collections are known. Combmaking waste at Whithorn (where most of the identifiable combs are type 8b) seems to persist only until c. AD 1200 (Nicholson 1997: 474), but the Dublin combs may provide higher resolution, and their analysis is eagerly anticipated (Riddler *forthcoming*).

Thus, one might propose two 'zones' of comb manufacture and dispersal in the medieval North Atlantic (fig. 9.5). The first may be termed the 'northern' zone, taking in Norway and the Northern Isles, and characterised by the use of type 9 and 13 combs, frequently constructed in reindeer antler, and invariably fixed with copper alloy rivets. The second, 'western' zone takes in England, Ireland, and western Scotland, and is characterised by the use of comb type 8 combs of red deer antler, and fixed with iron rivets.

It should be stated, however, that this is a generalisation, and there *is* some regional variation. For instance, type 8 combs do reach the Northern Isles, though they are much less common than types 9 and 13. Furthermore, the regions along the western axis show some internal variation; type 8 persists for longer in the Western Isles than in England, where it is replaced by type 14 (the situation in Ireland is as yet unclear). Similarly, type 9 and 13 combs *are* known in northern England and western Scotland, but they are so few in number that they surely represent displacements related to long distance travel. A few examples of locally made type 9 and 13 combs are present, but these are inferior in quality to their Scandinavian parallels, and are invariably fixed with iron rivets in standard (rather than 'decorative') arrangements. Either the template was not sufficiently well known and understood in England for copper alloy to be used, or access to such materials was not possible or affordable for the Anglo-Scandinavian or Hiberno-Norse combmaker.

It is interesting to note that the reverse is *not* true in the Northern Isles; no examples of type 8 may be identified as local imitations, either by riveting technique, materials, or any other criteria. One might thus surmise that either the template was well enough understood in the Northern Isles that it could be accurately reproduced there, or that during this period Orkney saw no combmaking at all, and all combs were imported, either from Scandinavia on the one hand, or the Irish Sea province on the other.

Notwithstanding the above variations, in general terms there is unity along each axis, not only in comb types, but also in the use of materials. The patterns might well relate to genuine axes of trade and travel. The connections between the ports of Bristol, Chester, and Dublin are certainly well attested (*e.g.* Graham-Campbell 1992; Griffiths 1996; Sivier 2002; Mytum 2003), and it does not seem inappropriate to add western Scotland into this group, particularly given the status and scale of activity evidenced at Bornais.

Returning to Orkney, the large number of type 9 and 13 combs also stands as testament to the wealth of the islands; some of these combs were certainly not purely functional (see below). The large number of these combs may relate to an expanding demographic able to acquire decorative dress accessories, and as such is testament to the economic wealth of Orkney during this period. The reasons for this wealth have been considered by James Barrett (*forthcoming-a*), whose arguments need not be rehearsed herein, but, following the twelfth-century demise of slavery and a probably simultaneous decline in the dominance of plunder economy, such wealth may have stemmed from the export of commodities such as grain, butter, and cured fish (*e.g.* Barrett *et al.* 1999). The role of combs in maintaining status is discussed below.

## 9.4 Communicating through combs: identity

Thus far, the main findings of this study have been set out, and their implications for our understanding of the social history of the British Isles have been discussed, with particular attention paid to how patterning may inform our knowledge of the Scandinavian settlement. It has been seen that development in fashions and manufacturing techniques

can lead to regionally recognisable suites of material culture; what Björn Ambrosiani (1998: 417) has termed 'dialects'. However, one should take care not to portray either the combs or their manufacturers and owners as *passive*, simply reflecting the events of the day or the traditions of the local area. Rather, one should consider how these combs actively mediated social relations. In particular, what was their role in the construction of identity in each of these social contexts? If one accepts that style is a matter of personal choice, then how did people go about communicating through their combs?

The first issue that must be addressed relates to the fora in which combs might be used in display. Clearly there was an element of the private involved, as combs were used for personal grooming. Thus, one might expect combs to display aspects of a private, personal identity, seen as appropriate only in these most restricted of social contexts. However, as we have seen, many combs were equally important as dress accessories, and as such facilitated stylistic display in the public arena; the forms and inscribed designs of combs of types 3, 5, 9, 11, 12 and 13 would be openly visible, as would the cases associated with type 6.

One might consider identity on the following scales: status, ethnicity, age, and gender. Unfortunately, the paucity of grave finds from England and Scotland make the final two categories very difficult to access. Nonetheless, it is possible to say something of the use of combs in the construction and perpetuation of ethnicities and statuses. In effect, these areas have considerable overlap; one might expect that in certain cases the symbols of a particular ethnic group might develop to become representative of a certain level of social or economic status. In these situations, the appropriation of such symbols in order to improve one's standing in society might be seen as emulation of a particular ethnic group. Nonetheless, some effort to separate the two has to be made.

#### **9.4.1 Combs and socioeconomic status**

Over the course of the period of interest, the nature of status changed considerably. While social rank and economic standing could, theoretically, represent discrete phenomena in any given context, herein 'socioeconomic status' is employed as an all-embracing term.

Clearly not all combs held the same meanings, and this review is arranged type-by-type, such that chronological and spatial patterning might become apparent, and that the qualities of different forms of combs might be realised. Starting with early double-sided forms, there are few type 10 combs in the corpus, but all are ornate. The number found at the Wellington Row site in York perhaps militates against their having any general symbolic or status-related use in the late Roman period, though the fine example from Dunadd may be an exception.

In Ireland and western Scotland, type 10 appears to have developed into type 11. The status associations of type 11 combs are unclear, but again they are manufactured and decorated to a high standard. Type 12, in contrast, is difficult to picture as any kind of status symbol or exchangeable gift. Though they are depicted on symbol stones, and certain type 12 combs are well made, none are ostentatiously decorated, either in northern England or in Scotland. The mechanism by which the type reached northern Pictland is unclear (see above) but gift exchange seems unlikely, particularly as its Scottish distribution is largely restricted to the Northern Isles, while type 11 spread from the west *into* Orkney and Shetland. Type 12 thus seems best characterised as a comb for everyday use, and, though probably still used as a dress accessory, not a symbol of high social standing.

Conversely, the use of combs 1a-c in gift exchange seems quite plausible. Type 1a combs really belong to the period preceding that of this study, and will not be treated herein, but their interment in Anglo-Saxon cremation graves is notable. It is particularly interesting that they were apparently frequently given special treatment as grave goods, being placed intact upon the pyre *after* cremation, rather than being burned together with the body and other goods (Williams 2003, 2004, 2005).

Type 1b and 1c both have things to recommend them in the creation and display of status. They are frequently ornately carved, both in terms of form and ornament. As was discussed above (see also chapter 6), Andrea Smith believes Scotland's type 1c combs to be derived from Anglo-Saxon or Frisian examples of type 1b. She notes historical evidence for alliances between Picts and Saxons in times of warfare; alliances that may well have been mediated via gift exchange (see Graham-Campbell 2002). Conceivably, combs were an appropriate item for use in this way, and there are historically-attested

occurrences of combs being exchanged between members of the elite in later centuries (Sherley-Price 1990: 125; Sorrell 1996). Many such combs may have been made of precious metals rather than bone or antler; such examples are recorded from the Cuerdale and Broch of Bugar hoards, and there is a possible fragment from Drimore Machair (MacLaren 1974). Furthermore, Smith suggests that the depiction of combs on symbol stones is indicative of their holding a particular significance for the Picts.

This mechanism is feasible, but the Anglo-Saxon/Pictish axis through which Smith proposes it was mediated merits consideration. Though the 'barred zoomorphic' form may originally have been an Anglo-Saxon one (Hills 1981), the template seems more likely to have reached Atlantic Scotland via the Irish Sea than through (direct or indirect) contact with Northumbria, particularly given the type's presence at sites such as Ballinderry and Lagore crannogs (Hencken 1942, 1950).

Nonetheless, the general standard of manufacture and ornament in type 1c is so high, and each comb so unique, that one feels the need to postulate some sort of special purpose for these combs. Though use wear analyses could demonstrate neither limited nor extensive use, the fact that the Dun Cuier example bears evidence of repair is perhaps telling. Indeed, this comb in particular seems unlikely to have had a purely functional, hygienic role.

Moreover, we know that personal appearance was an important signifier of status in northern Pictland; the depiction of a chieftain and his followers on the Brough of Birsay stone tells us as much (fig. 9.6), while dress accessories such as brooches were also important (Foster 1996: 65). Sharples has highlighted the apparent switch from the community-centred, architecturally mediated identity of Middle Iron Age Scotland, to the more personal, artefact-based self image that seems prevalent in the Late Iron Age (Sharples 2003; see Chapter 3), and it seems likely that highly decorative combs played some part in such a system.

Comb types 2a and 2b are more variable. Examples of type 2a are rarely finished to high quality, often being undecorated. In contrast, type 2b combs tend to be of a relatively high standard of manufacture, ornament, and finishing. It is quite conceivable that such combs were seen as symbols of status. Type 3 combs vary widely in terms of quality, and

represent a discrete, easily recognisable group. Such distinctive combs certainly served some messaging purpose, though this might well relate more closely to ethnicity than to status (see below). In contrast, type 4 combs are extremely functional in design, and demonstrate very little internal variability. They probably represent the most affordable of all combs, and were produced for the consumption of the majority.

Type 5 combs clearly had the capacity to invoke or enhance status. A number of extremely well-made, ostentatious type 5 combs from Birka, including 3 large 'horse' combs (fig. 9.7), are of particular note. Such combs are impractical as either dress accessories or toilet implements (their teeth certainly seem too coarse to be of any use in grooming horses), and they are best interpreted as symbolic media for use in gift exchange; 'monumental' combs. However, it may be that the class as a whole is best seen in such a context. Certainly the reworked comb 'pendant' from Bornais is suggestive of some significance, while the less accomplished examples might represent imitations, manufactured in order to help fulfil certain social aspirations.

In general, type 6 combs have a much more functional appearance, but the use of elaborate cases (which must certainly have doubled the combmaker's investment in time and energy, and as such were probably relatively costly) tell another story. Though the tenth-century fashion was for smaller, less ostentatious combs, most examples were still well-made, and they continued to be used in graves in areas where pagan burial persisted until this late date (*e.g.* Sweden, and the single example from Skail Bay, Sandwick, Orkney). It is difficult to say whether such combs continued to play a role in gift exchange, but they were certainly still intended to make a visual statement as a dress accessory.

Type 7 combs are slightly different. They vary considerably in form, but are rarely manufactured or decorated to high standards. While type 6 combs in cases were perhaps the preferred choice of the tenth-century 'Anglo-Scandinavian', type 7 combs may have been a less expensive choice. Their large size probably simply reflects the lengths of antler cut from tines, and little care was invested in shaping the connecting plates to a perfectly symmetrical shape. Moreover, ornament could be rudimentary, idiosyncratic, or asymmetrical. Many such combs lacked suspension holes, and if carried on the person, they must have been kept in pouches of some sort, so that their form was only revealed in

private, grooming contexts. Nonetheless, these combs were probably a rung or two higher on the scale of desirability than type 4, and may have been exploited by aspirational individuals.

Type 8 combs show some variability in form and design; while many are uniformly ornamented with chevron design, others (such as the 'semi-double' examples from York) are constructed and decorated with much more imagination. They do seem to have been produced *en masse* at Dublin, and a role in gift exchange is unlikely, but they must nonetheless have been designed to make a social statement, whether ethnic (see below) or socioeconomic. Moreover, their burial in foundation deposits at Bornais and Kilpheder is indicative of other, more complex significances (see below).

Comb styles in England were now set on a different trajectory to that of Scandinavia, and from types 4 and 8c onwards one may perceive a trend towards simple, utilitarian combs, ultimately culminating in the disposable type 14b combs of the late Middle Ages and postmedieval period. There is something of a lacuna in the twelfth to fourteenth centuries, and one must assume that combs of some other material - perhaps wood or horn - would have dominated during this period, and that if we can go on the mechanical properties of these materials, such combs were probably of one-piece construction.

This trend towards simplicity should be considered against the backdrop of a more general shift in attitudes to material culture. David Hinton has suggested that the high medieval period saw a movement towards the display of status and identity in a manner that did not require dress accessories and personal belongings (Hinton 2005: 167-170). Status was now inherited, a blood right, rather than being attained, and the Norman elite demonstrated and perpetuated their superiority through a formalised aristocratic package that included the use of the French language and behaviours such as hunting. Thus, there was no longer any requirement to demonstrate one's success through the display of portable material culture. However, many of medieval England's Anglo-Norman elite were mercenaries that travelled to England in search of land and power, and who previously held little such status in France (see Hollister 1980, 1987). It is thus interesting that they did not employ combs as symbols of status (as the Anglo-Saxon and Scandinavian elite appear to have done), instead choosing to express their status in a

different manner, perhaps recalling the social structures with which they were more familiar.

Luxurious clothing must have remained an important field for social display, so perhaps there is a more nuanced reason for the demise of dress accessories. Craftsmen - even weaponsmiths - were by now independent tradesmen rather than part of the retinues of magnates, while objects were rarely inscribed with their maker's or owner's names, and were no longer personified in such inscriptions. Moreover, jewellery ceased to be among the most important bequests a person could make in their will, suggesting a decline in the perceived importance of heirlooms imbued with ancestral meaning (Hinton 2005: 170). Once an object's life history was no longer a concern, such objects could more easily be acquired, and since the widespread adoption of coinage, acquisition could be by direct purchase rather than tribute or gift exchange. Thus, the practice of personal display seems to have undergone fundamental change. There was still a place for conspicuous consumption, and architecture and sculpture became increasingly important as the aristocracy wanted, where possible, to leave a lasting symbol of their status on the landscape, whether that be a church, castle, or manor house (see Blair 2005; McClain 2005).

According to Hinton, this pattern persisted until around AD 1170, when a conscious display of identity on the person once again began to become important. This reversal is indicated by a sharp increase in the number of finds of decorative dress accessories. In particular, base metal jewellery, pilgrim badges and secular imitations are of note, as they suggest that such conspicuous consumption was important throughout much of society. The pattern continued into the fourteenth century, although, perhaps in the face of depopulation after the Black Death, sumptuary laws attempted to curb such social climbing (Hinton 2005: 218)

However, Hinton's chronology does not fit well with the English comb data. Though the later stages of the Coppergate sequence are insecure, combs do seem to have remained popular into the eleventh century, and their main period of decline relates to the twelfth and thirteenth centuries, when Hinton notes resurgence in the popularity of decorative metalwork.

The simplest explanation for this discrepancy is functional. The decline of combs may have been unrelated to wider trends in social display, and was more closely connected with a tightened control on antler associated with the Forest Laws. However, this seems simplistic. It is unclear whether access to shed antler was curtailed (MacGregor 1985: 35), and it is nonetheless possible, if less satisfactory, to manufacture composite combs from bone (*cf* Ulbricht 1980; Riddler 1992; Rogers 1993). Moreover, if antler was protected as a product of the deer, then its status associations can only have heightened. Perhaps because of concerns regarding the treatment of deer products, or because of the lack of any 'comb' tradition in eleventh-century France, the elite of medieval England saw antler combs as an inappropriate medium for the display of status.

Some medieval combs were probably produced in perishable materials such as wood or horn at this time, and one has no way of knowing the manner in which such combs were used. Nonetheless, it is remarkable that documentary and artistic references to such objects are not better known. Thus, one must consider the possibility of a genuine decline in the importance of the 'display' component of comb use. As combs were produced on increasingly larger scales, to increasingly standardised templates, their significance within reciprocal relationships waned accordingly, such that much of their symbolic content may have been lost. Moreover, belief in the 'magical' associations of hair and grooming may have diminished as the social influence of the medieval Church increased. Combs may have come to be seen purely as implements of hygiene, and inappropriate for public view. When bone combs finally reappeared in the late medieval period, they were simple and disposable. Moreover, they were notably lacking in suspension holes, and it seems that they were no longer seen as an appropriate medium for display.<sup>7</sup>

This trend could not contrast more sharply with that seen in the far north of Britain. Though Scottish and Scandinavian fashions changed much between the tenth and fourteenth centuries, combs were considered important fields for display throughout. At

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<sup>7</sup> The only exceptions may have been the 14<sup>th</sup>–16<sup>th</sup> century 'lovers' combs' described by MacGregor (1985: 82). Such combs were manufactured in boxwood or ivory, featured inscriptions and decorative ornament, and may have been used in a new form of 'gift exchange' between courting couples. However, they are relatively rare, of special purpose, and thus cannot reflect the mainstream of comb design or use.

no point in time, and in no region, does one see evidence of a desire for the simple or unornamented. Indeed, combs continued to be used as a canvas on which to display one's status. Though people eventually shied away from combs of impractically large size, there were many other ways in which status could be displayed. In type 5 and 6 combs the effect was achieved through the use of intricate interlace designs, while in types 9 and 13, extravagant use of copper alloy (and other metal) plating was seen as desirable, while some Trondheim examples even featured suspension chains (fig. 9.8). It is notable that perhaps the most idiosyncratic and highly accomplished of all of Scotland's type 9 combs comes from Skail, Deerness; certainly the site of a high status hall house, and possibly the home of Thorkel Fostri (Lamb 1997).

There are also highly ornate examples of type 13 combs, decorated with profiled connecting plates and endplates. Though their shapes may not relate directly to the trades of their owners (*cf* Clarke and Heald 2002), and many lack suspension holes, it nonetheless seems likely that they were intended for display. Such display may well have been realised through their use in personal grooming ritual or the exchange of gifts, rather than as dress accessories. In the thoroughly 'Scandinavian' worlds of Norway and the Northern Isles, overt ethnic display may have been redundant. Nonetheless, the continuing 'Scandinavian' fashion for the ornate contrasts markedly with the situation in northern England, where, as we have seen, combs were no longer seen as an appropriate field for the display of status. The longevity of the fashion in northern Scotland surely related primarily to the region's ties with Norway, and one might suggest that voyages across the North Sea were not uncommon. However, it might also be partially related to the social structure of Orkney at this time, which differed markedly from that in high medieval England. Although nominally an Earldom, in practice the system was something of a heterarchy, in which successful or audacious magnates could rise to considerable prominence with or without the support of the Earl (Barrett *forthcoming-b*). Thus, in some ways, the culture could be compared with pre-Viking and Viking Age societies. In such a world, the display of status and the retention of followers through gift exchange remained important, and it is easy to see how decorative combs in the latest fashions could benefit both the giver and the receiver of such a gift.

#### 9.4.2 Combs and ethnicity

Understanding ethnic signalling may be more complex than status (Pohl 1998: 60), so it is necessary to consider the mechanisms by which meaning is transmitted. Following Weissner (1983), style may be seen as *emblemic* (relating to group identity) or *assertive* (more idiosyncratic and personal), and a single object may simultaneously transmit elements of both (Chapter 3). Weissner herself had difficulty developing a predictive model for the recognition of style in artefacts (see David and Kramer 2001: 183-189, 219 for a critique), so it is well to take some time to consider the means by which combs may have transmitted stylistic information.

One might expect the more regularly recurring elements of comb form and ornament to be widely understood, and they may well have related to particular social groups. Thus, general comb form and ornamental techniques that show limited variability may be seen as transmitters of emblemic style. Examples might include the use of distinctive comb types, such as types 1c, 3, 5, 8, or the various subforms of types 9 or 13. The more uniformly distributed decorative schemes, arrangements, and motifs must have been similarly widely-recognised and understood. Examples might include classic Ambrosiani A2 (ring and dot) or A3 (interlace) ornament.

More distinctive and unusual designs, such as those seen on many type 5 combs from Birka (**fig. 9.9**), might be seen as transmitters of more personal, assertive style, particularly if one views such extravagant combs as individual commissions. The same could be said of the highly variable ornament found on type 1c combs. It should also be noted that if these combs were the media of reciprocal relationships, then the meaning of a given comb is determined in large part by the gift *giver*, rather than the receiver, and wearer, of the comb. Thus, one might expect such combs to transmit messages relating to kinship, status, ideology and protection. The meaning of the comb shifts subtly when taken from the gift-giver and worn by the receiver; from its original meaning as an extension of trust and kinship, it comes to confer status and group membership upon its wearer. Thus the biography of the comb and those of its maker, bestower, and wearer become inextricably intertwined (see below).

In combs that are likely to have been produced as stock for sale, rather than created to order, the use of assertive style is a little more complex. One might assume that the consumer still played some role in the decision-making process, as the choice of which

comb to purchase still had to be made, but this decision is necessarily limited by the range of forms and designs that the combmaker opted to create. The curation and continued use of outdated combs represents a more active decision, and surely has social meaning, perhaps referring back to ancestors, in an effort to legitimise status or other aspects of social identity. In contrast to this 'inherited' identity, explicitly personal expressions of style may have been created through inscriptions and graffiti. However, though combs from Scandinavia sometimes feature remarkably articulate representations of identity, such as the overt symbolism on the Sigtuna 'Christ' comb (fig. 9.10), examples are surprisingly rare in the British study areas. Instead, one must search for meaning in the more typical aspects of comb morphology, and this is an approach that must be explicitly theorised (see chapter 4). A fundamental component of the nature of discourse is the 'field' in which it takes place (Barrett 1988). Thus, an understanding of the contexts in which combs could be used to express ethnicity is vital. This issue has already been discussed in general terms, but some more explicit comments are appropriate.

In pre-Viking England, the display of identity through dress accessories and portable artefacts was well-established (e.g. Hines 1994). Moreover, the significance of combs - possibly in the making and remaking of identity - is evidenced in Early Anglo-Saxon cremation graves (Williams 2003, 2004), and suggested by their manufacture in precious metals, and records of their use in gift exchange. Thus, by the eighth century, the sending and receipt of signals through media that included combs would have been well-understood. One might suppose that such messages were transmitted through the distribution of well made type 2b combs as gifts, and in their display as dress accessories. This may have applied even to the poorer manufactures of types 2a and 12, but if not, then their significance may have been revealed privately in grooming rituals, as is illustrated in contemporary literature (e.g. Jones *et al.* 1949: 116-119, 134-5).

The possible persistence of type 2 and 12 combs into the tenth century is indicative of a deliberate choice. It is unlikely to represent simple conservatism or 'backwardness', and more probably relates to the construction of a shared 'Anglo-Saxon' (or perhaps explicitly Northumbrian) identity, as Hall (2000: 320) has proposed for the prolonged production of strapends in Trehiddle style. In such a dynamic and unstable time, in which native identities are constructed, presumably in relation to some perceived Scandinavian threat, one might expect such factionalism to be well-evidenced. However, no 'interface' phase

(in which the coexistence of Scandinavian and native material culture exist side-by-side) is visible at York, and though this may be an issue of stratigraphic and chronological resolution and inter-site correlation, in all levels the 'Scandinavians' are difficult to find. Only a small number of objects from York can be definitively characterised as 'Norwegian' or 'Danish', and the rarity of type 5 combs in northern England is remarkable.

If our collections are not too biased by the prevalence of tenth- and eleventh-century excavations, then the number of people in ninth-century Yorkshire and Lincolnshire that chose to express their Scandinavian identity through the medium of combs was small. This may reflect either a relatively small-scale settlement or an initial reluctance to broadcast one's affiliation in an unfamiliar, unstable and potentially hostile environment. It may be that this demographic ratio (in the former case), or social reticence (in the latter) eventually led to the creation of an Anglo-Scandinavian material culture, rather than the apparent cultural 'takeover' that characterises the Northern Isles of Scotland.

The situation in the tenth and eleventh centuries was very different. Combs from Viking Age levels in York are largely of types 4, 6, 7, 8a, and 8b. The collection thus differs considerably from Birka, but is comparable with Haithabu. However, the closest parallel can be made with Dunlevy's (1988) Irish corpus (where type F2 and F3 combs are identical to types 7 and 8a/8b). Most of York's combs were probably made in the town, and there must have been considerable demand amongst the local population for combs of these new forms. This sudden flourish of 'Hiberno-Norse' identity is paralleled in sculpture, where Irish artistic motifs were adopted and adapted, producing new colonial monuments such as ring-headed crosses (Lang 1991: 41).

This development must be seen in political terms. Ragnald's takeover of the Kingdom of York in AD 918 marked a significant political watershed, and though Hiberno-Norse overlordship was unstable, it persisted intermittently until the middle of the tenth century, and over this time close political ties existed between York and Dublin (Lang 1991: 8). Given the importance of material culture in communication during times of social stress (Barth 1969; Chapter 3), it is thus natural that display began to make reference to the perceived origins of dominant political magnates. The exploitation of both fixed and portable forms of material culture is particularly notable, as the two media no doubt had

different audiences. Though it has been argued that combs could be used as symbols of status (see above), there is no doubt that the commissioning of sculpture was much more socially restricted. Thus, the combs add some nuance to the scenario developed on the basis of sculptural evidence; Anglo-Scandinavian identity was widely seen as desirable, and was reproduced at multiple social levels within the free population of York.

Nonetheless, some combs do not quite fit this explanation. The use of type 4 combs seems to have been uniquely English, and is notably well-evidenced south of the Danelaw, as well as in Yorkshire, Lincolnshire, and East Anglia. Similarly, type 3 combs seem to persist right across the political threshold of Norse settlement. Even if - following Riddler (1990) - they do represent 'Saxon' rather than 'Frisian' combs, they are nonetheless a discrete group, unlike anything else in use in the British Isles, Frisia, Francia or Scandinavia between the seventh and tenth centuries. They may thus represent a specific social group, which at present cannot be identified or characterised.

The situation in Lincoln is more difficult to assess, as the numbers of combs are so much fewer. Nonetheless, the evidence does not contradict the above interpretation, as type 7 is once again well represented. At both settlements, the rare presence of type 9 combs are indicative of some level of contact with Scandinavia itself (or perhaps Atlantic Scotland) from the late Viking Age onwards. Outside of the towns, the situation may have been different, as there is the possibility of continuity in comb style from the eighth and ninth centuries. Certainly, there is little evidence of active signalling of 'Norse' identity in the smaller settlements in York and Lincoln's hinterlands.

Stray finds of type 9 are easily explained as the possessions of travellers from Scandinavia, or perhaps even Atlantic Scotland, and the size and extravagance of some such examples suggest that it was not always too much of a risk for a Scandinavian outsider to openly display their identity in Viking Age and high medieval England. Such display would surely have stood out in the eleventh and twelfth centuries if decorative dress accessories (including visible combs) were indeed as rare as they appear to have been. Indeed, the local imitation of Scandinavian forms suggests that such fashions were seen as exotic or desirable in some contexts. However, it is fair to say that the zenith of combs as fashionable accessories had now passed, and though some combs did exist, it is difficult to speculate on how they were used. When type 14b combs began to appear in the late

Middle Ages, they were uniform in construction, and were apparently mass-produced. Thus, they probably played very little part in display.

In Late Iron Age Atlantic Scotland, the idea of identity as expressed through portable material culture was just emerging. Thus, one must expect that public, visual display was a fundamental element in identity negotiation. This idea is supported by the fact that many type 1c, and some type 11 and 12 combs were suitable for suspension (fig. 9.11). Type 11, in particular, must have had certain associations of ethnic identity, or at least contact with the west, and as we have seen, may also have had status associations like type 1c. It is thus possible that the various facets of an individual's conferred or self-affirmed identity (including ethnicity, social or economic background, political affiliations, and/or social standing) might be easily 'read off' from a person's choice of comb, particularly when understood in conjunction with other aspects of personal dress and appearance.

The perceived need for such display can only have intensified with the arrival of the first Norse settlers, while the effects of such comb-display may well have had implications for the incomers. Type 5 combs were already a status symbol in Scandinavia, but their use probably had little ethnic content until contrasting traditions were observed. Thus, it is likely that one's decision to use and display combs of types 1c, 11, 12, or 5 would have been an ethnically and socially meaningful one. As time passed, and the material culture of both northern and western Scotland became insularised in their own ways, such ethnic signalling probably became less important. Nonetheless, statements could still be made; while the use of type 8 combs probably had no real ethnic implications in the west, in the Northern Isles it may have said much more about identity or social and economic contacts. The same can be said of the use of type 9 and 13 combs in the Western Isles. Moreover, even in the absence of ethnic symbolism, combs may still have had age, gender, status, or even religious associations.

In order to demonstrate how the creation of ethnicity may have worked in practice, case studies from different social contexts will be presented and discussed below. Given that identity is most clearly and volubly expressed at times of stress, and particularly so in situations of contact with 'the other' (Barth 1969), then it is sensible to consider examples from the Viking Age, both in England and Scotland.

Beginning with England, as we have seen, new 'Scandinavian' or 'Hiberno-Norse' templates were introduced to Northumbria in the tenth century. Rather than either remaining solid signifiers of a Scandinavian faction, or becoming altered and adapted into new hybrid variants, the combs rapidly became extremely popular in their original forms. However, the situation differs from that of the Northern Isles, where such phenomena seem to have affected such a wide range of forms of culture - material and otherwise - that the society can be said to have been 'Scandinavianised'. Instead, in England, different forms of material culture 'reacted' to the stress of contact in different ways, or as Richard Hall has said:

"There was, of course, no single 'Anglo-Scandinavian' trajectory of hybridisation, but diverse and complex responses by both individuals and groups forming actuality behind the archaeological record"

Hall 2000: 313

Thus, certain Scandinavian cultural traits seem to disappear from the repertoire fairly rapidly (*e.g.* pagan burial, Richards 2002), some become hybridised, or altered (*e.g.* some forms of decorative metalwork, Owen 2001), while others are completely reinvented as 'colonial' artefacts (*e.g.* sculpture, Stocker and Everson 2001, and other forms of decorative metalwork, Thomas 2000). The 'behaviour' of the combs represents a fourth reaction, or rather a *non*-reaction; they change very little at all, so as to be largely indistinguishable from the combs from Dublin and Haithabu.

However, they seem to have been produced and consumed in such numbers, especially at large settlements such as York, that it is improbable that all those using such combs were of Scandinavian genetic heritage; more likely the phenomenon suggests rapid and widespread acceptance of a new design. In so adopting these combs, the populace ensured that type 6 and 7 combs were reinvented as cultural references, becoming assimilated into the Anglo-Scandinavian milieu. This contrasts markedly with the situation in smaller settlements, where combs show conservatism of design. Though the market patronised by the people of Flixborough has not been identified, it does appear that tenth-century northern England had a heterogeneous population. Moreover, it may have been factional, with inter-group relations being mediated through material culture, including combs.

Turning to Atlantic Scotland, if one considers the early phases of Norse settlement in the Northern Isles, where it has been shown that types 1c/11/12 and 5 were in coexistence for a time, it would be useful to know who was using which combs, and how the combs were being used in identity-signalling. Given that, at first, each comb form would have been new to either natives or settlers, it seems safe to assume that the identities bound up in comb-decisions had at least *some* ethnic dimension (rather than being entirely driven by status, age, or gender). With this in mind, one may begin to ask questions of the relationships formed and mediated through the use of these items (see above). For instance, were Norse settlers using the 'Pictish' reindeer combs in an attempt to assimilate with the native population? Alternatively, were the surviving Picts continuing to manufacture combs in the old designs, and negotiating with Norse settlers and merchants for the necessary raw materials?

This is a question that cannot be solved using the combs in isolation; context is fundamental. A good starting place might be Buckquoy, the 'type site' of Norse-native continuity. Here, portable material culture has been characterised as 'Pictish' (bar a single possibly Norse pin), while the architecture of the later phases is probably 'Norse'. One might ask whether the site represents the Pictish residents' construction over previous buildings of a house in the new Norse style, or the arrival of Scandinavian overlords, who, upon coming across a small Pictish settlement built a house in the style they felt familiar with. On the face of it, a simple question to ask might be whether the inhabitants of the 'Norse' phases at Buckquoy were actually of Scandinavian birth; something that might be addressed through isotope studies of the skeleton in the site's sealing burial. However, it is more meaningful to ask whether they thought of themselves as Scandinavian. Certainly, the burial is suggestive of the desire to present oneself (or one's peers) as part of the Scandinavian cultural milieu, but the nature of the relationship between the inhumed individual and the occupants of the house remains unclear.

Rather, we must focus on the building and its contents in themselves. Ritchie has famously described the building style as 'Norse', and the architecture certainly fits the rectilinear model. Following Burmeister (2000), architecture is the ideal medium through which to transmit public 'identity messages', which may be bold and aspirational. In contrast, furniture and the portable material culture of the house's private sphere might be

active in the creation of a different level of identity; a more private, perhaps kin-centred sense of self. According to this logic, one could see Buckquoy, with its 'Norse' architecture and 'Pictish' combs, as the homestead of a family group that in private saw themselves as Orcadian natives, but who publicly displayed their taste for the new Scandinavian architectural fashions. Perhaps one should not be surprised by such a situation, given that the site is located in Birsay, close to the centre of Scandinavian power in Viking Age Orkney.

Thus, Buckquoy seems to suggest the presence of a 'Pictish' people using 'Scandinavian' architecture, but their own combs, made from reindeer antler obtained through trading with Scandinavians. This situation acts as a useful reminder of the complexities of identity, and a warning against drawing direct relationships between genetic, cultural, linguistic and other forms of identity.

Indeed, creation of identity is fundamentally driven by personal choice, albeit one informed by wider social currents and political dynamics (Weissner 1983; Jones 1997; Hall 2000). Individual motives cannot be accessed through the study of broad patterning, even at the site level. Instead, agency is most cogently revealed in the study of individuals. In the present case, that means individual artefacts, allowing a focus on particular combs for which biographies may be written. Some such combs are exceptional in terms of morphology or context, but perhaps more may be learnt from more 'run-of-the-mill' examples, the study of which may explicitly elucidate the sorts of processes, events and discourses that may have impacted upon a given comb during its lifetime.

## 9.5 Comb biographies: locating the individual

The approach taken in this thesis has been that it is not possible to understand combs through a focus on any one aspect of their existence. Rather, it is necessary to understand the complexities of their changing meanings, associations, and relationships, with other items of material culture, people and events. In order to write such object biographies, it is necessary to have information - either by direct observation or through analogy - for all the significant phases of an object's life; its production, distribution, consumption, and disposal. This obviously shrinks the dataset somewhat, but it is still possible to say

something of a certain number of combs. In broad terms, the methods of comb manufacture are relatively well understood, and, depending upon date and economic context, one may make reasonable suggestions as to distribution mechanisms. Data relating to use is less accessible, but inference may be drawn from the evidence of wear and repair, while means of disposal is often discernible if combs are recovered *in situ*. Nonetheless, the processes, discourses, events, and associations that informed each stage of a comb's life often remain ambiguous.

One may say a little about those combs that show evidence of displacement from a context we might expect. Amongst the many type 5 and 6 combs from Birka, there are a few conspicuous anomalies. One is a type 3 asymmetric comb (fig. 6.20), which is probably indicative of contact with 'Frisian' merchants. It is perhaps most surprising that this comb exists in isolation. However, a more unexpected component of the corpus is a single type 11 comb, decorated with saltires and secured with bone pegs (fig. 6.21). The type is unknown in Scandinavia, and may have arrived at the market place in the hands of a merchant from, or who had travelled to, the Northern Isles or Irish Sea area. Though early Viking Age contact between Scandinavia and the British Isles is well attested, there is relatively little evidence of interaction (direct or indirect) between the peoples of northern Britain and eastern Scandinavia. Thus, the biography of this comb - though not accessible in detail - adds some nuance to the economic geography of Viking Age Europe.

There is also evidence for movement in the other direction. One of the type 5 combs from the Brough of Birsay (fig. 9.12), has an unusual geometric interlace design that is not only unlike anything found in the British Isles, but also seems rather 'un-Scandinavian' in general terms. It may well be that the design reflects influences picked up in one of the more distant areas of Scandinavian contact, perhaps in the far north, south, or east. Similarly, at least one of the combs from the Scar burial may have a central Swedish origin (see below), while there are close parallels between the Brough Road burial comb and one from Novgorod. On the face of it, both of these combs are suggestive of direct/indirect contacts between eastern Scandinavia and Orkney. Such a scenario is not as unlikely as it may sound, given the extent of aristocratic mobility in the Viking Age and high medieval period. For instance, it is known that Magnus the Good (an eleventh-century king of Norway and Denmark) spent his fosterage in Kiev, before returning to Trondheim (*e.g.* Hollander 1995: 486).

The Norwegian connection is interesting in itself, and though it is clear that most of Atlantic Scotland's type 9 and 13 combs were imported from western Scandinavia, one or two examples merit closer attention. The particularly ornate type 9 comb from Skail (fig. 8.25) must surely have been made in a Norwegian workshop; the standard of craftsmanship is extremely high, and it shares close parallels with a comb found at Trondheim (Chapter 8). However, its terminal ornament is unique, arguably resembling a 'Pictish beast'. We may be looking at a one-off commission, made for an Orcadian magnate.

The consumption phase of a comb's use life may be further elucidated if there is evidence for wear and repair. General patterns have been noted in Chapter 8, and herein attention will be focused on specific examples. The repair or reworking of an old or damaged comb is meaningful in a cultural, as well as an economic sense. While it is possible to read any programme of repair or careful curation as evidence of fiscal frugality, in reality there was probably a much greater social content to such actions. The reworking of the central field area of a type 5 comb into a pendant, suggests that someone living at or visiting Bornais appreciated the significance of this comb type, and perhaps wanted to reinvent its associations and confer them upon themselves. Indeed, it is possible that the pendant was also once a carefully curated comb, but one that was necessarily converted following accidental damage. The same could perhaps be said of a reworked type 5 fragment from Caistor, Lincolnshire, though the political and cultural environment here was clearly different to that in western Scotland, and the significance of such an action was probably different. Here, it may well have related to the assertion of some perceived 'Scandinavian' identity or heritage.

Moving from combs in which we have most evidence about their use life, one might consider those for which only their final context is clear. The high level of workmanship displayed on the type 5 and 6 combs recovered from graves in Scotland are indicative both of the time taken in their manufacture, and of their perceived value. Indeed, some such combs may have been created by special commission, or passed on from one magnate to another by means of gift exchange. They may have stood for pacts or alliances between leaders or groups, or they may have formalised clientship or tenancy agreements.

One or two examples merit particular attention. The comb associated with the adult male burial at Scar bears ornament that is most closely paralleled in central Sweden (Carlsson 1999), and, though its raw material could not be confidently determined, the dimensions of its individual components, together with its overall morphology, are consistent with elk antler. It thus seems possible that the individual in question - or someone associated with the funeral rite - had contact with eastern Scandinavia. Similarly, the iron-riveted type 6 comb and case from Skail Bay, and the type 7 comb from Cnip, may be indicative of contact with Ireland, England, or southern Scandinavia.

The details of how these combs were used are a little unclear. The general absence of tooth wear and evidence for breakage or repair might suggest that they were curated for their own sake, and rarely used. Such behaviour is consistent with a role for such combs in formalising alliances, bonds and relationships, though there are other alternatives. It is possible that the combs *were* used, but not on a regular basis. Their 'special' status may have necessitated a similarly specialised use; perhaps in ritualised grooming. Saga evidence does suggest that the act of mutual hair combing had a particular intimate component (see Chapter 1). A further alternative is that the combs were manufactured purely for the purpose of interment. If this was the case, combs could have been curated for many years prior to an individual's death (a possibility which has important implications for their use in dating), or they could have been quickly manufactured soon after the death of the person concerned. This option is perhaps the least likely, for a number of reasons. First, the scale and level of craftsmanship of many of these combs do not sit well with the idea of them being hurried commissions. Second, and more importantly, though we know that reindeer was being imported into Atlantic Scotland, the simplest explanation for the number of high quality, reindeer antler type 5 combs in burials dated to between AD 850 and 950 is that they represent the personal belongings of the first generations of the early waves of settlers.

The vagaries of burial ritual are manifold, and have been discussed elsewhere in some detail (*e.g.* Graham-Campbell and Batey 1998: 113-154; Owen and Dalland 1999a; *cf.* Parker Pearson 1982; Carver 2000; Friberg 2000; Fridriksson 2000; Sørensen 2001; Lucy and Reynolds 2002; Hadley 2002; Richards 2002; Williams 2003, 2004, 2005). Thus, herein it seems redundant to speculate too much on their nature, as it is unlikely that

combs in and of themselves can further this debate. However, it is worth considering the role of such combs in the burial rite. Howard Williams (2003) has made some interesting suggestions about the use of combs in Early Anglo-Saxon cremation burials. For him, burial (and cremation) is fundamentally about the 'remaking' of a person's identity. The functional role of items such as combs in the day-to-day reordering of a person's appearance makes them appropriate as a symbol for this post-mortem reinvention, thus explaining their placement *unburnt* in cremation graves. It is difficult to posit such a role for combs in Viking Age burials, as they receive no such special treatment, and appear to be just one component of a repertoire of appropriate grave goods. Nonetheless, one may still take something from Williams' theory, and see furnished burials not as a reflection of the deceased individual's identity, not as a manifestation of the society in which he lived, nor even simply a performance put on by those involved in the funeral, but as a 'remaking' of the dead. The new identity may be informed by the individual's life, and by the wishes and ideas of his/her kin and peer group, but it is not necessarily a direct expression of any of these. Thus, the (probably) male child buried at Balnakiel was 'remade' as an adult warrior or chieftain, complete with outsized weaponry. His type 5 comb may not have ever belonged to him, but the references it made to Scandinavian identity, status, and bonds of fealty projected the image that someone intended for him; that of a powerful warrior.

Another interesting 'death' for combs relates to the possible ritual interment of combs within structures. At Buckquoy, a type 11 comb was deliberately placed in the wall of the Pictish cellular house (Ritchie 1977; Brundle *et al.* 2003). A bone spoon and painted pebble were similarly meaningfully deposited. In the minds of those involved, some connection must have existed between these objects, but any such association or meaning is now lost to us. It is interesting to note, however, that this is not an isolated case; the structured deposition of animal bones within buildings has been proposed at other Iron Age sites in Atlantic Scotland (*e.g.* Campbell 2000; Mulville *et al.* 2003).

Furthermore, in later years the practice of comb interment seems to be peculiar to the Western Isles. At Bornais and Kilpheder, type 8 combs may have been deliberately buried in foundation and closing deposits in house floors. The meaning of this is rather hard to pin down, but may perhaps say something about the associations that combs had during their lifetimes. They may have had some perceived spiritual or magic properties, such that

they acted as a charm, either for the wearer/user, or the house in which they were buried. Perhaps, as has been suggested, they had an important role in the negotiation of economic relationships. If they were used to formalise tenancy agreements, then perhaps some examples developed close associations with architecture. It may thus have seemed appropriate that they should be either intimately connected with particular buildings during their construction phase, or that they should be 'killed' when a house was abandoned or demolished. However, the details of the contexts in question are unclear, and definitive interpretation must await full publication of the sites.

Taken as a group, these biographies demonstrate the resolution and explanatory potential achievable in studying combs when one applies such a 'social' approach. It has been shown that it is possible to investigate the various stages of a comb's life, and to give meaning to the interactions of the object, its maker, owner, and contexts of use. The focus upon combs as proxies for trade or industry has been, and will continue to be useful, but it is important that one attempts to move beyond the production phase. This has been the aim of this thesis, and in so doing, it has been shown that combs may be informative on a range of scales, from the inter-regional and regional, to the local level, and even down to individuals.

## 9.6 Conclusions and Future Directions

In all, the study has been successful in finding variation within an oft-cited homogeneous corpus. Analysis of the regional and chronological bases of this variation has fostered discussions on the nature of combmaking, and, more importantly, has shifted debate toward the *lives*, rather than simply the *births*, of these objects.

To begin with the nature of the craft, combmaking in Britain was not homogeneous, and was probably undertaken by craftsmen working out of a variety of contexts. Some may have been retained by lords and potentates, but others may have been entrepreneurs relatively free of such restraint. Some were settled, with their own urban workshops, others were itinerant, albeit active only on a local scale, while some may even have worked in the countryside, travelling to town for sales on market days only. Particular situations probably varied with time and place, dependent on access to raw materials, availability of properties for use as workshops, consumer demand, competition, and local politics.

In England, though the possibility of rural manufacture cannot be discounted, evidence is not forthcoming. However, that does not mean that one must fall back on the itinerancy model, at least not in its traditional incarnation. Although there is little sign of local variability, combs are clearly different to those found in mainland Europe and Scandinavia. Though no doubt inspired by the Norse type 5 and 6 combs, techniques of manufacture, as well as materials (both antler and rivets) were different in important respects, only really sharing similarities with Denmark and Ireland. Thus, while itinerant workers may have been active in Yorkshire and Lincolnshire, they were not the same craftsmen that were plying their trade on the continent. Although Ambrosiani never explicitly stated that this was her belief, her theory does depend upon the assumption that workers frequently crossed the North Sea. If they did not, then the mechanism for creating the regional similarity evaporates. It now appears that one must see the similarity of form in terms of fashion or aspiration, rather than common manufacturers. It is unclear if this holds for the whole of Scandinavian Europe, or if the British Isles represent a special case, given their position across the North Sea. While it is not suggested that the sea was a barrier (indeed, it may be better understood as a medium for communication, see Carver 1990), it is argued that perpetual maritime travel would not have been an efficient use of time for a combmaker. Moreover, such an arrangement would depend on the peasants'/town-dwellers' understanding that they must collect and curate stocks of antler in order to provide the combmaker with raw materials. The existence of such similarity in socio-economic structure across vast areas of land and diverse polities seems difficult to support.

The situation in Viking Age Scotland is difficult to assess, given the lack of evidence, but the Middle Ages seem much more likely to have seen the action of centrally-based mass-producing industries. The remains from medieval Bornais could certainly be interpreted in terms of a settled workshop (the possibility of craftsmen frequently travelling to Uist from mainland Scotland seems unlikely, particularly given the apparent dearth of manufacturing waste from the mainland). Similarly, the Late Norse combs of northern Scotland seem to have been produced somewhere in Scandinavia; such as Bergen or Trondheim, where the evidence for manufacture is considerable. Moreover, the clear differences between the combs of the Irish and North Sea regions in this period are indicative of rather discrete industries. From the fourteenth century, English

combmaking is also dominated by mass-production, this time of simple double-sided 'nit' combs made of bone and ivory. The Scottish fashion could not be more distinct from those of Saxon, Viking Age, and Anglo-Norman England.

Turning away from the details of production, the combs have complemented existing scholarship on material culture, documentary evidence, linguistics, and genetics. The study has revealed considerable information relating to the politics, economy, and society of Scandinavian settlement in northern Britain. The combs have been of utility in ascertaining the dating of settlement in Scotland's Western Isles, and in some cases we have even been able to comment on the possible 'origins' of some of the settlers.

Following settlement, the combs have allowed consideration of how and why cultural interaction varied in space and time, in some situations leading to the development and perpetuation of *hybrid* societies, in others causing one culture to be subsumed within another. On a finer level, it has been possible to consider the active role of combs in the making of identity, and the study may be seen as a valuable attempt to consider portable artefacts in terms other than function and chronology.

Over the course of the study, the potential for future work has become clear. First, given the ubiquity of combs in collections from Viking Age settlements, it has been necessary to limit the survey to Atlantic Scotland and northern England (more particularly Yorkshire, Lincolnshire, and Durham). It would be interesting to compare the results of this research with findings from a study of other parts of the British Isles, including known areas of Scandinavian settlement such as the Wirral, and important sites south of the Danelaw, such as London and Southampton. Though, with the help of published sources, this has been attempted in outline, it would be more valuable to physically restudy much of the material from these sites, according to the criteria outlined in this thesis. Similarly, scoping exercises in less-well represented areas such as southwest England, Wales and mainland Scotland might be of interest, principally in tracking the evidence for Scandinavian movement and contact in these poorly understood regions.

Though the chronology outlined in chapter 6 should be useful in future studies (both specialist and general), some refinement would be useful. In particular, given the date range of the survey, the origins of the earliest combs (types 10 and 1a) are insecure. A study centred on the transition from Roman/Late Antique Britain to the eighth century

would complement this study well. It will also be noted that the English and Scottish corpora are fundamentally influenced by fashions from external areas. Thus, detailed study (chronological and otherwise) of Irish material would provide an interesting comparison for the present study. In particular, internal sequencing of type 8 forms may help to validate or inform Parker Pearson's Kilpheder chronology (Parker Pearson *et al.* 2004b). Ian Riddler's current work on the corpus from recent excavations in Dublin is thus greatly anticipated.

Similarly, internal chronologies for both types 9 and 13 are required for the fine dating of eleventh to fifteenth century contexts, but this will depend on renewed analysis of Scandinavian, rather than Scottish collections. An integrated study of the collections from Trondheim, Oslo, Bergen and Tønsberg would be particularly useful, as would comparanda from Schleswig and Sigtuna. Type 14b is also quite poorly understood, and would benefit from a study explicitly centred on formal variability, and its significance, chronological or otherwise. The relationship between types 14a, b, and c (if any) is yet to be formalised, and a broad-based investigation of the occurrences of these types across Europe (and into the Near East) would also be welcome.

Knowledge of collections for which direct associations are less well established would also be of benefit. For instance, though combs are known from Iceland, to the author's knowledge there has been no comprehensive study of the collection, and this limited the potential for inclusion of data in this survey. The recognition of displaced combs - whether by type, method of manufacture, or raw materials - would clarify both settlement history and trade dynamics for the North Atlantic. For instance, the presence or absence of type 8 combs might have important implications for the question of whether the Icelandic colonies were partially fed from the Irish Sea province. It would also be interesting to consider whether there is any evidence for comb manufacture there, and if so, what materials were used.

Similarly, studies of other forms of material culture intimately associated with combs would be helpful in chronological refinement, as well as providing useful comparanda in the studies of provenance, trade, and culture contact. Recent work by Amanda Forster (2005) on steatite is of note, while Anne Brundle is currently engaged in a study of bone and antler objects from Iron Age Orkney. The latter project should help to clarify the

origins of types 11, 12 and 1c, the relationships of combs with other forms of skeletal objects, and the 'Pictishness' of the assemblage as a whole. In the current scholarly climate, with its heavy emphasis on identity studies, similar research on stone, metal, and (where available) woodwork in English, Scottish, Irish, and Scandinavian contexts is anticipated.

In addition, absolute dating of combs would be of great use in both testing and tying down the chronology laid out in Chapter 6, though considering the error range in the early medieval section of the radiocarbon curve, it is unlikely to inform the question of whether type 1c, 11, and 12 combs persist into the Viking Age. Furthermore, given that one of the staples of reindeer diet is lichen - which is very long-lived - it is possible that any dates taken from combs made of *R. tarandus* antler would be adversely affected by this, in a manner analogous to the marine reservoir effect (J. Barrett *pers comm.*; cf. Hughen *et al.* 2004). Thus, studies into this issue are necessary before any extensive programme of absolute dating is undertaken.

Another area that might repay further study is that of raw material analysis, particularly as the methodology has the potential for wider application. Quantitative investigations (through the use of image analysis) of the porosity of antler core material may highlight further identification criteria, particularly regarding the distinction of *C. elaphus* and *A. alces*. Morphological and species-based variation in the thickness of antler core and compacta would also benefit from a more systematic investigation, which might usefully involve a programme of X-ray imaging of modern and archaeological antler material. Furthermore, verification of the raw material identifications undertaken on combs would be useful. Such verification could be based on aDNA analysis, stable isotope provenancing, and, anticipating future developments, ancient proteins.

Such an investigation would conceivably provide support for the comb provenances proposed in this thesis. Further corroboration and nuance might be available through the analysis of materials used in rivets. XRF analysis would allow the characterisation of copper alloy as bronze, brass, or gunmetal, which could have implications both in terms of provenance and culture contact (*e.g.* Paterson 2001).

It has been difficult to comment in any detail upon the use of combs in furnished graves, as has been achieved for the collections for Early Anglo-Saxon cemeteries (*e.g.* Williams 2004; *cf.* Richards 1987). The problem is the diminutive dataset, and though statistical testing is never likely to be an option, some qualitative comparison of comb-laden graves from England, Scotland, Iceland, and Scandinavia may prove enlightening. Recurrent associations of artefacts, grave architecture, and biological/demographic characteristics might well be informative as to the use of combs, and other grave goods, in the shaping of post-mortem identity. This may well feedback into our understanding of the use of combs in life.

Nonetheless, the project has achieved several important ends. The logical problems with Ambrosiani's 'itinerancy' theory have been outlined, and it is now clear that the model cannot be applied to the British Isles without modification. Important methodological strides have also been made; the reliability of identifying antler objects to species level has been established, and the ease with which the relevant techniques may be learned has been demonstrated.

Synthesis of new data and information from sources published in a range of languages, has facilitated valuable reassessment of the typology and chronology of European combs, and made it available to a wider audience. Variability in northern Britain has been investigated, both at the type level, and in the presence/absence of discrete attributes. Correspondence analysis and other quantitative investigations have demonstrated the legitimacy of certain types, and have helped to identify spatial variation and to establish regional developments. Raw material use and manufacturing traditions have also been shown to be regionally variable, and, together with differences in quality of construction and ornament, this has facilitated the recognition of 'displaced' examples. In particular, the question of pre-Viking contact between Scotland and Scandinavia has been answered (in the negative), while the nature of Norse-native interaction has been illuminated in both English and Scottish contexts. Moreover, diachronic developments in the manufacture, distribution, and use of combs have been established, and these have important implications for one's understanding of the broader political, economic, and social climate of pre-Viking to medieval England, Scotland, Ireland, and Scandinavia.

On a finer level, through analysis of raw material use and method and quality of manufacture, together with investigations of use wear and depositional context, it has been shown that the biographies of combs may be usefully and instructively written. In this way, combs have begun to show their potential for illuminating human behaviour and social interaction.

In general terms, the study has answered some important questions, and raised new ones. It has developed and tested new analytical techniques, and has broken ground in the study of combs at least, and perhaps in the social analysis of portable artefacts as a whole. It has shown combs to have the potential to elucidate issues as diverse as chronology, regional variation, town-hinterland relations, small-scale handicraft, long range trade, culture contact, and identity. Combs should have a position at the forefront of material culture studies, alongside decorative metalwork, ceramics, and coins, and it seems assured that further studies of this artefact class will foster greater clarity and nuance.

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