GENDERED GARNETS

A comparative study of garnet adorned objects in the Rhine

and North Sea area during the Early Middle Ages

Gwendolynn de Groote

Cover: Disc-on-bow brooch, found at Wijnaldum (after Nicolay 2014)

GENDERED GARNETS

A comparative study of garnet adorned objects in the Rhine and North Sea area during the Early Middle Ages

Gwendolynn de Groote s0938165

MA thesis Archaeology (4ARX-0910ARCH)

Prof.dr. F.C.W.J. Theuws

Archaeology of the Roman Provinces, Middle Ages and Modern Period

University of Leiden, Faculty of Archaeology

Leiden 27-7-2018 final version

Table of content

Acknowledgements

This thesis has been a long an difficult process, both for me personally and the people supporting me. Therefore I would like to use this opportunity to thank them for all their help. Firstly, I would like to thank my supervisor Frans Theuws, for his patience and his guidance throughout his process and his ability to renew my enthusiasm. My fellow students of the research seminar 'Byzantium in the North' for allowing me to use the database and food for thought when discussing the subject. I also would like to thank my friends, for helping me with mental support, answering questions about access at various times and for proof reading my drafts.

Lastly I would like to thank the people that kept believing in me, even at moments I was afraid I would not manage to finish this research.

Chapter 1: Overview

"A stone called Anthrax, which cannot be burned, but when held up to the sun has the colour of burning coal" (Theophrastus: On Stones, passage 18, Caley and Richards 1956 in Arrhenius 1985, 23)

The research conducted within this thesis comprises the early medieval[1] objects that are adorned with garnet inlays and their social significance in relation to gender. My first encounter with this type of objects was during the 2015 research seminar 'Byzantium in the North' of Frans Theuws. These objects, among others, were used as a proxy in order to understand the engagement of oriental objects in early medieval European economics. During this research, my curiosity towards these objects and this gemstone was kindled. During the conference 'Gemstones in the first Millenium AD' this curiosity was encouraged when I became aware of the multiple (social) facets of these objects that were still left unstudied. A first idea for this research was born.

1.1 Research importance

Gemstones, such as garnets, are often found to be set on ancient objects and jewels. They are used since the earliest times, due to their appealing beauty and are often attributed symbolic value (Calligaro 2004, 102). Classical sources, such as Theophratus quoted above, already mention the use of garnets and other gems, but these sources have to be handled with care when used for referencing, for it is not always clear to which stone they refer (Arrhenius 1985, 23-26; Sorg 2011, 142-144; Thoresen 2017, 155-156) It is however evident that each civilisation throughout history seems to have had their own preference regarding the gem they used (Calligaro 2004, 102). For Europe during the Early Middle Ages (fourth to seventh century AD) the characteristic gemstone is the garnet, found set within a variation of objects (Arrhenius 1985; Calligaro et al 2002, 321).

Garnets have been the subject to many years of study, of which the main research subject has changed over the years. The emphasis at first was upon the typo-chronology and the different styles of these objects, often used to establish differences between ethnic groups (Roth 1979; Siegmund 1998). Technological studies became the next focus, during which the different mounting techniques and the quality of the craftmanship became important. These differences were used for establishing site of

---

[1] 'Early medieval' and 'Merovingian' will be used interchangeable within this research.

construction and suggesting possible gem cutting sites. Also, a first determination of the used garnets sources was established, based upon the physical properties of the garnets (Arrhenius 1985). Because the raw material of the inlays, the garnets, had to be obtained from over long distances, garnet inlaid objects have been used as important markers for ancient trading routes (Drauschke 2011). The provenance in relation to trade has been the main topic for years, especially with the emergence of chemical analysis. With these new techniques India was confirmed to be the dominant source of garnets used in Merovingian times (Calligaro 2004; Périn *et al* 2006). A research topic of the garnet inlaid objects that mainly is addressed as annotation instead of emphasised is that of the social significance. Since 2014 a team of international researchers is partaking in a research projects called 'Weltweites Zellwerk'. This research focusses upon the cultural significance of garnet objects in light of the observed decrease in the seventh century whilst in Anglo-Saxon England and Scandinavia an increase is noted (https://zellwerk. hypotheses.org/). An important aspect of the social organization of society is the aspect of gender, because it is fundamental to how people relate to others and understand themselves (Sofaer and Sorensen 2013, 528). Gender archaeology has changed significantly during the past 30 years, and, however noted that there are differences between the male and female garnet-inlaid objects, the social implications and possible meaning and reason are seldomly subject of study[2].

1.2 Research questions

The subject of this thesis the change in gender representation of garnet adorned objects in Frankish-Merovingian Europe during the fifth and sixth centuries and the observed shifts to this regard in the seventh century in relation to the North Sea cultures from Anglo Saxon England and Scandinavia. The social and cultural significance of these changes will be discussed in view of recent gender- and burial theory. In order to do so, the following questions will be addressed:

How are garnet adorned objects used to communicate gender associations within the Early Medieval burial practices?

- What type of objects are adorned with garnet inlays?
- Which significant difference in the geographical and chronological distribution of garnet adorned objects can be seen?

[2] the exception being the study of Härke 2011, although the emphasis of his study is the total grave assemblage.

- What are the differences in the occurrence of garnet adorned objects in male and female graves ?
- Which significant differences in the geographical and chronological appearance of garnet adorned objects can be seen in relation to gender.
- Are garnet adorned objects prestige objects or commonly found?
- What is the correlation between the amount of garnets used and the social importance of an object?

1.3 Methods and approaches

In order to answer the research questions as stated above, the garnet related data collected for the 2015 research will be analysed. The database was assembled from various sources (e.g. excavation reports) originating from the Benelux and the German Rhineland. This research area was chosen because similar research had been conducted for the surrounding areas, but our region had been left out. A more practical consideration was the accessibility of the data (Auzina *et al* 2015). The process of data collection and the creation of the database will be elaborated upon in chapter 4. In order to say something about how garnet adorned objects are used to communicate gender associations within the social strata of the early medieval period, the material will be analysed with use of burial- and gender theory. The results will be tested against the research conducted in England by Heinrich Härke (2011). By comparing the material found within the research area with two case studies, i.e. the grave of Childeric and the ship burial of Sutton Hoo, the data will be incorporated into a larger research frame to make geographical and chronological comparisons.

This thesis is divided in two parts. The first section consists of two chapters that provide the framework in which the research of this thesis is incorporated. Chapter two will provide a brief historiography of the Merovingian period and the raw material (garnet) will be introduced. An overview of different objects styles and manufacturing techniques will be discussed as will the current state of research. The next chapter (three) will discuss the theoretical framework in which the study of this thesis will take place. Because the majority of the finds analysed in this thesis were found in graves it is fitting to introduce relevant theoretical considerations upon the study of grave goods, as well as a short review of previous and contemporary approaches on gender research within archaeology.

The second part of the thesis will be focussed upon the methodology used and the examination and presentation of the dataset. Chapter four will describe the process of data collection, the encountered problems and the decisions made. Also the practical limitations of the dataset will be discussed. Chapter five will present an overview of the information available from the dataset, in order to answer the research question. In chapter six, the obtained data will be incorporated within the framework and theories discussed in the first part. The gender representations of garnet adorned objects within early medieval burials will be discussed and some suggestions about the social significance will be made. In the final chapter (seven) the research questions will be answered where possible, and some ideas and suggestions for future research will be presented.

Chapter 2: Introduction of Early Medieval garnets

The early medieval period saw rapid economic and political changes after the fall of the Roman Empire. This chapter will shortly describe these changes within the societal landscape, providing a framework in which the research of this thesis is incorporated. A description of garnet as material will be presented here, as will be the types and styles of the objects that are adorned with garnet inlays during the early medieval period. To conclude this contextual information, a short historiography of important research themes within archaeological garnet studies will be discussed.

2.1. Historical background

The early medieval period (fifth-tenth centuries AD[3]), starting with the collapse of the Roman Empire, is more commonly known as the Dark Ages. This term refers to the allegedly economic and cultural setback during the early medieval period. This view mainly concerns the northern regions of the Roman Empire, which in the post-Roman world were left outside of the Byzantine rule and sphere of influence. Studies regarding the transformation of these northern regions, meaning roughly Britain, France, Belgium the German Rhineland and the western Netherlands to the inlet of the Rhine[4] create a completely different view (Loveluck 2013, 3; Wickham 2010, 104). Studying a combination of the textual sources, which mainly focused on the leading social strata of medieval society, and the material culture of the early medieval population provides a broad context for the post Roman trajectories of socio-economic and cultural change (Loveluck 2013, 3; Theuws 2000, 1-4).

The fall of the Roman Empire meant a great loss of territory but, politically and culturally speaking, only a few amends were made in the Byzantine empire (Ostrogorsky 1959, 48). This was rather different for the western and northern provinces. In these areas, formerly known as the Western Roman Empire, rapid economic and political changes took place because of the abandonment of the border, more commonly known as the Limes, by the Roman military. Germanic tribes, such as the Franks[5], Goths and Lombards, took over the area as a going concern, marking the start of the middle ages. (Berendsen 2005b,185; Drauschke 2008, 367; Hallsall 2014, 515, 519; Härke 2016, 121;

---

[3] Merovingian time (400-650AD) and Carolingian time (650-900AD)
[4] The course of the Rhine during the Middle Ages, now known as Nederrijn, Kromme Rijn and Oude Rijn (Bazelmans et al. 2011, 62-65; Berendsen 2005b,184).
[5] tribes from Drenthe, Overijssel and Gelderland

Sarris 2011, 75-76; Šmit 2014, 89). The Germanic tribes were familiar with Roman civilisation, and they introduced a new type of societal organisation, which was heavily based on the ways of the Roman military. This marked a departure from the old societal structure and brought forth a militarisation of the social relations, better suited for the newly established power of the Warriorbands (or *Gefolgschaf*t) as the socio-economic 'elite class' (Halsall 2014, 517; Härke 2016, 121; Sarris 2011, 77-83). Another big cultural change was the gradual disappearance of slavery as known during Roman times. This meant that the agricultural workers and small landowners gained a greater level of freedom (Loveluck 2013, 9, 16).

The changes within the political structures of north western Europe also had an effect on the economic landscape; a lot of commercialised economical knowledge got lost, commodified exchange decreased, and the system of commercialised agriculture and surplus production changed (Sarris 2011, 76-77,79). Many landowners started to live from their own estates and a lot of farm sites used during Roman times disappeared because of their vulnerability, creating a more pastoralist economy with small farming communities (Brather 2014, 567-568; Sarris 2011, 76-77). Existing settlement foci however procured their food from the rural hinterlands, successfully adapting unto a maintainable ratio of producers and consumers. This transformation of the farming communities became the engine of the economy (Brather 2014, 567-568; Hodges 2012, 66-67; Loveluck 2013, 33; Sarris 2011, 76-77,79). This change within agricultural economy however cannot only be attributed to the militarisation of society. Wasteland between existing settlements, such as woodland, marshland and uplands, became inhabited by small farming communities. Flooding of the western coastal area resulted in reduced occupation and also the North Sea coastal area became inhabited in lesser quantities. Correspondingly to the rising water levels, the river Rhine flooded and procured new distributaries, but the river ridges remained populated. Also the eastern sand grounds of the Netherlands remained inhabited (Bazelmans *et al.* 2011, 62-65, 69; Berendsen 2005a, 110-111; Berendsen 2005b,185; Brather 2014, 567-568; Sarris 2011, 76-77).

In the sixth and seventh centuries, some of the small farming settlements, already present during Roman or early medieval period turned into larger occupation agglomerations, whilst others arose upon locations without a Roman or early medieval predecessor (Berendsen 2005b,186; Brather 2014, 567-568; Loveluck 2013, 33-35, 57-58; Sarris 2011, 76-77,79). Parallel to the foundation of the new settlements, some of

14

the Roman villa sites and Roman towns saw a continuity of occupation or became re-occupied, establishing some continuity for urban centres, but on a much-reduced basis. In the Netherlands, this occurred in the Loess area in Limburg and along the Meuse river. These towns functioned as remaining nodes for exchange with the Mediterranean and other foreign traders and became limited central places associated with social and ecclesiastical authority, the church being the last authentic 'Roman' institution left (Brather 2014, 567-568; Effos 2001, 97; Hodges 2012 66-67; Loveluck 2013, 3, 15-16, 33; Sarris 2011, 75-77). The elite within these centralized places are considered to be the main influencers in the division of trade of utilitarian and prestige goods. Access to commodities and in particular material cultural assemblages are assumed to be influenced by the geographical connections and with the agent's specific social role in society (Loveluck 2013, 7, 14,16).

The transition from the Roman period to the Early Medieval period also saw a distinct transition in mortuary practices. During the Roman times, expressive grave monuments communicated economic and/or social power, whilst during the Early Medieval period the dead are typically accompanied by deposited grave goods instead of an elaborate grave monument (Härke 2001, 25). Apart from the grave assemblages, the positioning of the grave within- and the total layout of the cemetery is thought to hold some information about the power relations within society as well (Härke 2001, 25; Loveluck 2013, 7).

In the early medieval period three types of burial practice can be distinguished. The main practice, also known from Roman times, being that of burying inhumations and cremations within large row-grave cemeteries (1) also known as *Reihengräberfelder*, which emerge in the later fifth and early sixth centuries (Brather 2014, 567-568; Drauschke 2008, 376; Härke 2001, 9-10; Loveluck 2013, 34-35). Cemeteries during the medieval period are communal property and take up a specific area in the landscape. Together with a relative uniformity of grave construction and standardised grave goods, this suggests a certain type of organisation and uniformity of the dispersal of the dead (Härke 2001, 11-15,27). The difference between the cemeteries in the Roman period and those of the early medieval and Christian times is the position they took within the (cultural) landscape or town. Roman cemeteries were strategically placed along roads and other locations that would enforce interaction. This contrasts with the mortuary practices of Post-Roman times. Cemeteries during the medieval period seem to have been placed in such a manner that you deliberately must choose to visit; they are not

accidentally encountered in daily life, which indicates a different social engagement (Härke 2001, 15; Loveluck 2013, 34-35).

Lesser known from the archaeological record are the small inhumation groups and isolated individual burials nearby areas of habitation (2). Though, thought to be relatively rare, these burial types are found within the bounds of the agricultural settlement agglomerations from the sixth and seventh century (Brather 2014, 567-568; Härke 2001, 9-10; Loveluck 2013, 34-35; Theuws & Alkemade 2000, 448-461). Burials inside churches (3) are more common than those of single burials but are still a lot less communal than the cemetery practices. The decision to use churches as burial location is thought to have emerged during the sixth century as a specifically aristocratic burial rite (Härke 2001, 9-10; Theuws & Alkemade 2000, 448-449).

The grave goods custom practised in Europe during this period is quite abundant, and both inhumation and cremation graves tend to be furnished with all kinds of objects, such as weapons, drinking vessels, clothing accessories and jewellery. These artefacts can vary from objects used during the burial ritual to personal belongings and gifts and have been used by archaeologists to discuss a wide variety of aspects of societal constructs, such as economy, (religious) ritual, and gender roles. (Brather 2014 567-568; Ekegren 2013, 175; Härke 2001, 25; Härke 2014, 41-42, 47; Loveluck 2013, 7; Theuws & Alkemade 2000, 411-417). Garnet inlaid objects, such as jewellery and costume adornments, are also frequently found within burials and their entanglement with early medieval society is quite apparent (Arrhenius 1985; Behrendt and Mecking 2013, 191-193).

2.2.   Description of the material

Due to their aesthetic appearance gemstones (e.g. garnet) have been used as adornments throughout history. They are attributed a symbolic and social value which can vary greatly for different (historical) cultures. Gems are defined as precious minerals, or precious stones, when exhibiting distinct features such as bright colours, good transparency, nice brilliance and high hardness. This hardness provides them with a strong resistance to alteration; even when transported or buried they show little signs of weathering over time, an asset that makes them very useful for archaeological research (Calligaro 2004, 102; Cronyn 1990, 103, 106-107; Galoisy 2013, 453; Krippner *et al* 2004, 36).

16

The use of gems has already been mentioned in classical sources, but the prepossession for certain types of gemstones varies for different cultures. In the Early Middle Ages, the most commonly found precious gemstone, usually set in jewellery, is the red garnet (Arrhenius 1985, 23-26; Behrendt and Mecking 2013,193; Calligaro 2004, 102; Calligaro *et al* 2002, 321; Sorg 2011, 142-144).

2.2.1. Garnet

An abundance of classical, archaeological, and historical texts are written about the use of garnets, or specifically, red stones, within early societies. In these sources, different names are used referring to the stones such as *anthrax, carbuncle* and *almandine.* When studying garnets one must keep in mind that these denominations don't have to refer to what we nowadays (chemically) call garnet (Adams 2011, 10-11; Arrhenius 1985, 21; Thoresen 2017, 155-156).

Garnet is the collective name of a group of widespread silicate minerals which are found in a lot of variations (Adams 2011, 10-11; Arrhenius 1985, 21; Cronyn 1990, 102, 106-107; Krippner *et al* 2004, 37; Quast & Schüssler 2000, 77). Garnet crystals are naturally multifaceted or cubic, single crystals with a transparent structure that chemically consists of a silicon and oxygen ion combined with various metal ions (Calligaro 2004, 105,110; Cronyn 1990, 102 Quast & Schüssler 2000). The two most known garnet families are those of the aluminium garnets, or the *pyraldine* family, and the calcium garnets called the *urgrandite* family, with the *pyraldine* family being the most common (Calligaro 2004, 105,110). The metal ions present in the chemical composition of a garnet provide a wide variety of bright colours, such as white, green, orange, red, and a rare blue colour. Garnets from the *pyraldine* family, have different shades of red, reddish brown colour. They can also lean towards a more orange shade of colour. These are the type of garnets that are archaeologically known to be used in the Merovingian period (Behrendt and Mecking 2013,193; Calligaro 2004, 102).

The different chemical compositions of garnets are called *end-members* (Behrendt and Mecking 2013,192-193; Calligaro 2004, 110; Galoisy 2013, 453; Krippner *et al* 2004, 36-37). In total, there are fourteen different *end-members* known, but Almandine (Fe3Al2[SiO4]3), Pyrope (Mg3Al2[SiO4]3), and Spessartine (Mn3Al2[SiO4]3), are the most widespread (Behrendt and Mecking 2013, 192-193; Mathis *et al* 2008, 2349-2350; Calligaro *et al* 2002, 321; Calligaro 2004, 110; Krippner *et al.* 2014, 37-38). In the majority of cases garnets do not consist of *end-members* in their pure elemental

forms, but are a mixture of varying proportions (Behrendt and Mecking 2013, 192-193; Mathis *et al* 2008, 2349-2350). Which metal ions are present within a garnet and in which quantities depends on the host rock together with the pressure and the temperature throughout the formation process (Behrendt and Mecking 2013,193; Cronyn 1990, 106-107; Galoisy 2013, 453; Krippner *et al* 2004, 36). Most garnets are formed within metamorphic rocks, which leave different types of inclusions within the crystal structure, based upon the composition of the original, host rock (*protolith*) (Cronyn 1990, 106-107; Krippner *et al* 2004, 36). Identification of gemstones based upon their characteristics such as optical and mechanical properties, known from gemmology, often proves to be problematic for archaeological material, especially when the gem is transparent. This is also the case for Merovingian garnets; the stones are frequently mounted in metallic settings, and the stones often have been altered. In addition, the different varieties of garnets are optically almost impossible to distinguish from one another (Calligaro 2004, 102; Thoresen 2017, Sorg 2011,140). When studying (archaeological) garnets, particularly when used in artefacts, chemical analysis is necessary to establish the provenance of the garnets, by analysing the major, trace, and rare earth element composition of the garnet (Krippner *et al* 2004, 36; Zang 1995 in Sorg 2011,140). Even chemical data can be insufficient in establishing the provenance of the crystal since the chemical formulas specific arrangement defines the structure of the garnet. Therefore, structural information can be necessary. Complementary chemical and structural analytical techniques can be very useful for the study of garnets; especially regarding the study of provenance (Calligaro 2004, 105; Krippner *et al* 2004, 36). This poses a problem, since these are set in valuable and fragile ancient objects, the analytical methods must be non-invasive and non-destructive (Calligaro 2004, 101,104).

2.2.2. Provenance

Garnet-inlaid objects play a big role in the studies of ancient trading routes from the Oriental world to Europe and within Europe. The raw material of the inlays, the garnet itself, had to be obtained from over long distances. This makes garnets useful in marking ancient trading routes from an archaeological perspective. Furthermore, the hardness of garnet (6.5 to 7 on Moh's hardness scale[6]) makes it a durable gemstone, which can endure almost any environment and withstand time without noticeable weathering

---

[6] The Mohs hardness scale was created in 1812 by geologist and mineralogists Friedrich Mohs. It consists of ten minerals arranged in increasing order of hardness, based on a scratch test, with the softest (1) being talc and the hardest (10) being diamond.

(Calligaro 2004, 102; Galoisy 2013, 453). This attribute, combined with their suitability for chemical analyses, makes garnets perfect for provenance applications in archaeology (Behrendt and Mecking 2013,192; Drauschke 2011, 40-42; Krippner *et al* 2004, 36; Larios and Pusch 2014, 12-14; Mathis *et al* 2008; 2349-2350).

During the formation processes of garnets, their chemical composition is depended on the host rock, as well as the temperature and the pressure under which the crystal structure is formed. In other words, the geographical location of their occurrence is defining the appearance of the crystal, and therefore the chemical composition can be used as a fingerprint to trace their source (Behrendt and Mecking 2013,192; Calligaro 2004, 102-103; Drauschke 2011, 40-42; Krippner *et al* 2004, 36; Larios and Pusch 2014, 12-14; Mathis *et al* 2008; 2349-2350). As mentioned in the paragraph above, the objects under study regarding archaeological garnet research are valuable and fragile ancient objects, so the analytical methods must be non-invasive and non-destructive (Calligaro 2004, 101,104). For the chemical composition, an external Ion Beam Analytical method is used; PIXE/PIGE (*particle induced X-ray emission*) (Calligaro 2004, 104; Calligaro *et al* 2002, 320-325). The chemical composition provides some information about the major element compositions, establishing which type of garnet, or *end-member.* To pinpoint the location of origin even further trace- and rare earth element studies can be conducted (Krippner *et al* 2004, 36; Zang 1995 in Sorg 2011,140). To observe the microscopic features inside the crystal such as mineral inclusions, methods such as such as XRD (X-ray diffraction) and Raman micro-spectrometry are very effective methods (Calligaro 2004, 102-110; Krippner *et al* 2004, 37). Certain chemical garnet compositions, including the trace elements, have been empirically correlated to specific sources (Krippner *et al* 2004, 36; Mathis *et al* 2008, 2350). The sources relevant for the Merovingian material, based upon known research (see subsection 2.3.) are those of India, Sri Lanka (Ceylon) and Bohemia (Calligaro 2004; Drauschke 2011, 38; Mathis *et al* 2008, 2349-2350). A chemical analysis will show a garnet composition somewhere between these three groups. When compared to the chemical composition of samples from these (macro-) regions, combined with the information received from trace element studies, a region of origin can be established, such as almandine from India, and rhodolite from Ceylon (Calligaro 2004; Mathis et al 2008, 2350; Périn *et al* 2006).

When studying garnet inlaid objects far more information than the garnet provenance alone should be taken into account. The specific style or fashion in which the object was made, as well as the mounting techniques can provide information about

the possible site of construction and craftmanship. Consequently giving us some insight in the transfer of ideas and stylistic forms of art and craft during this period (Drauschke 2005 in Sorg 2011,137; Drauschke 2008, 370; Hamerow 2017, 71-76). A general overview of the mounting techniques and styles of garnet inlaid objects is therefore discussed in the next paragraphs.

2.2.3. Mounting techniques

Cloisonné

One of the most dominant types of early medieval garnet jewellery is the characteristic style called *cloisonné* (Calligaro *et al* 2002, 321; Behrendt and Mecking 2013, 191; Mathis *et al* 2008, 2348; Sorg 2011, 150). This type of style is quite easy to recognise by the use of small metallic compartments, or cells, as a geometric or schematic decoration, which hold thin plates of red garnets (fig. 1) (Arhennius 1985, 79; Calligaro 2004, 109; Farges 1998, 323; Mathis et al 2008, 2348; Sorg 2011, 150). The cloisonné style got its name from the structure of the cells, which are separated from each other by a thin metallic wall; a cloison. Birgit Arrhenius (1985) proposes two different types of cloisonné with technological differences: *clasped cloisonné* and *cement cloisonné* (Arrhenius 1985,79-84).

Figure 1. Examples of small cloisonné brooches (after Nicolay 2014)

Clasped cloisonné is made of precious metals such as gold and silver. The use of gold however is more common, and characteristic for this style (Arrhenius 1985,79-81; Farges 1998, 323). The cells cover almost the entire area of the object, leaving only the outer edges of the cell work freestanding and are soldered to a base of the jewellery, as well as to each other. Within the cells an organic paste was inserted before the garnet was placed. This paste was only used as a yielding foundation. The garnet itself would fill almost the entire cell (Arrhenius 1985,79-84; Farges 1998, 323; Sorg 2011, 150). As finish the metallic walls where flattened to improve the hold upon the garnets, as well for aesthetic reasons by creating a nice and flat surface (Arrhenius 1985,79-84; Sorg 2011, 150).

20

One of the important technological differences between *cement cloisonné* and the clasped technology, is the absence of soldered seams between the walls and the back plate. An independent panel with the decorative design would be made, from which the outer rim could be attached to the back plate. The shapes of the garnets would be cut or pierced out from the precious metal plate, a little tighter than the original size. The garnets would be fitted at the rear site from this plate and behind the garnets a thin checked golden foil would be placed. This is one of the defining features of this method. The foil underneath the transparent garnet is thought to function as an optic enhancer by improving the brightness and the colour of the garnet. A thick layer of liquid cement was applied underneath as adhesive, and when it hardened it added stability (Arrhenius 1985,79-84; Cronyn 1990, 162; Nijboer & van Reekum 1999, 206). The back plate upon which the whole design would be mounted, could be made of pure precious metals, whilst others are made from lesser metals such as iron and bronze, which were then plated in gold or silver (Arrhenius 1985,79-84; Farges 1998, 323; Sorg 2011, 150).

The dominant style of cloisonné used in the Merovingian period however technologically combines the mentioned styles (fig. 2). This technique used a different kind of adhesive than the cement cloisonné, called *sand putty.* When dried in an oven, this putty would firmly set the cell walls. For the cells, as well as the placement of the garnets it uses the same technique as the *clasped* technology, howbeit the cells are no longer soldered to each other but they are only soldered to the base plate. The characteristic checked gold foils from the cement style are still present in this technique (Arrhenius 1985,82).
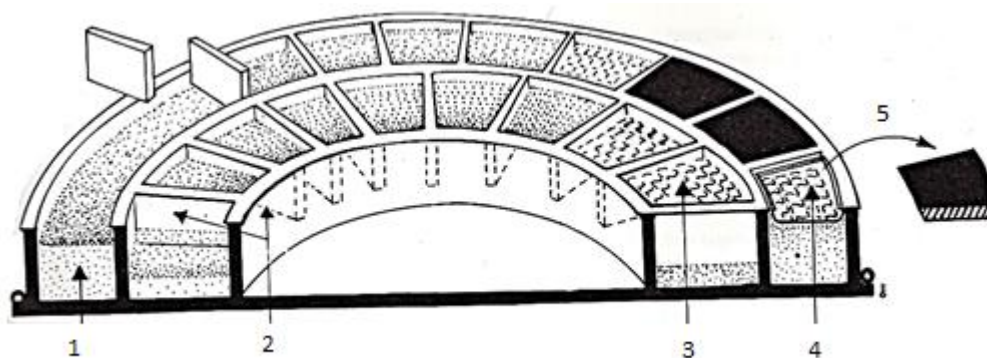

Figure 2. The principal technical features of garnet cloisonné: 1. Putty, 2. Metallic wall, 3. Checked foil 4. Cell 5. Garnet plate. (after Arrhenius 1985)

The other mounting technique that is quite commonly seen amongst garnet-inlaid objects is easily to distinguish from cloisonné because the castings of the garnets are separately located upon the object. This technique is called the *single setting* technique (fig. 3). Single settings know different varieties, which can be distinguished from one another by a technical analysis (Arrhenius 1985, 77; Behrendt and Mecking 2013, 191).
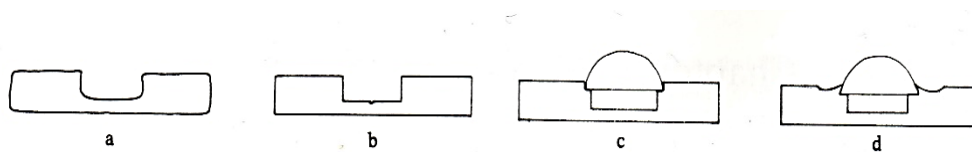
Figure 3. Single setting. Different stages of the Gypsy setting. a: cast cavity, b: drilled cavity, c: edge cut, d: driving metal over the edges of the garnet. (after Arrhenius 1985)

The *Flush* or *Gypsy setting* is formed within the base material of the object by sparing a cavity while shaping the object (a). In this cavity a garnet is set (c). Another method is by drilling a cavity into the object on the desired spot (b). See also figure 4. The latter is mostly applied for round garnets. When the stone is set within the cavity, small ledges are created in the base material around the stone with a chisel (d), which then are used to set the brim of the stone. This can only be done with soft metals like copper, silver or gold (Arrhenius 1985, 77-78).

Figure 4. Example of single settings. (Nicolay 2014)

The *band setting* technique contains mounts that aesthetically look similar to those of the cloisonné (fig. 5). A small band of precious metal is arched to the shape of the garnet with the ridge of the band a little tighter than the actual garnet size (a), to anchor the garnet. The band is directly fused upon the surface of the object (b) and the band is heated prior to placing the garnet (c). When the metal cools, the

Figure 5. Single setting, different stages of a normal band setting (Arrhenius 1985)

garnet is firmly set (Arrhenius 1985, 77-78). Because the garnet has to be placed with a bit of force, a stable and strong solder is necessary. To avoid this complication the technique could also be executed without the heating process by folding the rim of the setting over the edges of the garnet. Bands were often joined by overlapping the ends at one corner, which resulted in a somewhat asymmetrical setting (fig. 6). For a more decorative setting the bands cou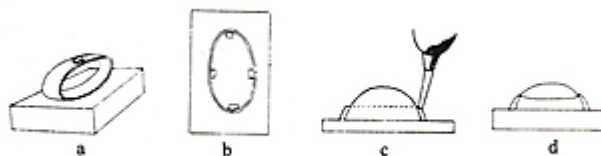ld be joined in the centre of one side, instead of overlapping. Also, the walls bordering the garnets are more protruded, so they can be turned over the edges of the garnet more easily. These settings still needed to be attached to the back plate with solder, but this can be achieved with soft solders[7]. Both these variations are known from the early medieval period in Europe (Arrhenius 1985, 77-78).
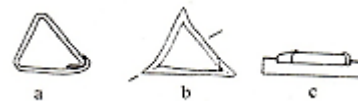
Figure 6. Single setting, irregular band setting. (Arrhenius 1985)

2.2.4. Object styles and types

Besides the mounting technique, the style of the objects also holds a lot of information. The construction of the objects and the used materials varied, based upon the assumed craftsmanship of the executed technique. Furthermore, garnet inlays are found adorning a wide array of objects, from just one single set stone till wholly covered objects (Behrendt and Mecking 2013, 191).

Merovingian objects found containing garnets are mainly sorted with the archaeological category of small finds and are primarily jewellery or part of costume adornments (Arrhenius 1985; Behrendt and Mecking 2013, 191). Garnet adorned objects that are most abundant in the archaeological record are *fibula*, or brooches, with the disc brooch being the predominant type. Other types of fibula/brooches that can be found containing garnets are bow brooches; figurative plate brooches (bird brooches) and S brooches (Behrendt and Mecking 2013, 191; Heeren & Feijst 2017, 207-222).

Disc brooches

For the disc brooches with cloisonné (dated from 485-570 AD) different shapes are known, such as *round* and *rosette* (fig. 7) (Vielitz 2003, 27-48). In addition, the size and the amount of garnets per object are variable. Because of the considerable variations,

---

[7] Soft solders have lower melting points and the joints are often weak (Cronyn 1990, 162)

three different types are specified by Siegmund (1998). These are types are based upon the rings with inlay fields present. Type one are those with only one single 'ring' of cloisonné, and are one average small round or rosette shaped brooches. Other forms, such as square, are known but in lesser quantities. Type two are bigger disc brooches containing two or more rings of inlays and often incorporate a variety of shapes within one brooch. They usually date to somewhat later in the sixth century. With the last type of cloisonné disc brooches (type three), the rings of inlays are combined with filigree, these are around the same size as the type two brooches (Heeren & Feijst 2017, 218-220; Vielitz 2003, 27-48, 129-130). At the end of the sixth, beginning of the seventh century (585-640 AD) a different type of

Figure 7. Examples of the different types of disc brooches: round (left) and rosette (right) (after Nicolay 2014)

disc brooch comes into fashion; *the composed disc brooch*. For this brooch, various techniques are combined such as filigree, cloisonné, and single settings with a variety of inlaid gems. The Dorestad brooch is the most famous example for the region around the estuary of the Rhine (Heeren & Feijst 2017, 224-226 Vielitz 2003, 35-42).

Bow brooches

Bow brooches are also divided in different subcategories based upon stylistic characteristics. There are bow brooches with a *semi-circular head-plate* (fig. 8) and elaborated footplate which are dated to 430-580 AD. For this type are local production variants known within Belgium (Namur, Tournai and Huy), and suspected for the Netherlands (wijk bij Duurstede). A chronological development of these brooches is constructed using the cross section of the bow, which starts at the earliest examples of bow brooches with a triangular section and at the end of production of bow brooches, these brooches are made with a thin, broad and low section. The latter are dated from 470 to 560 AD and these are

Figure 8. Example of a bow brooch, found at Rhenen (after Nicolay 2014)

the ones that are also found with inlaid garnets (single settings). The material used for these brooches is mainly copper alloy, but the ones with garnets tend to be made of gilded silver. Semi-circular head-plate bow brooches are often found within graves as a matching set and are therefore thought to be worn in pairs by women (Heeren & Feijst 2017, 207-211; Koch 1998).

There are also bow brooches with a (more or less) *rectangular head-plate* which are further divided in subcategories. For this research, only one subcategory is relevant, namely the *disc-on-bow brooches*[8] for they are the ones containing inlaid garnets (cloisonné) (fig. 9). These fibulae are dated to the late fifth, early sixth century (575-625 AD) and are mainly found along the coastal area. They are thought to be part of a Scandinavian group of bow brooches, with a religious symbolic link to Odin/Wodan[9] (Heeren & Feijst 2017, 211-214; Olsen 2006, 479–528). Comparable with the other bow brooches, these disc-on-bow brooches are thought to be worn by females. In contrast to the circular-head-plate brooches, they are mostly found as a single object, not in pairs. Therefore, it is thought that these brooches are used to close necklaces (Heeren & Feijst 2017, 211-214; Olsen 2006, 479–528). The elaborate footplates of all the bow brooch categories don't form a unity either; there are rectangular footplates, and oval- and diamond shaped footplates, which sometimes contain an animal head at the end. These varieties are contemporary with the different types of head plates (Heeren & Feijst 2017, 207-214).

Figure 9. Example of a disc-on-bow brooch, found at Wijnaldum (after Nicolay 2014)

Figurative plate brooches

Figurative plate brooches are small, flat brooches with a wide area of figurative forms, varied from abstract to mythical, and existing animals also known from the Nordic

---

[8] Type *Hogebeintum* in the Netherlands
[9] Will be elaborated upon in chapter xxx

figurative tradition (Hedeager 2008, 12-13; Hedeager 2011, 61-61,67 Heeren & Feijst 2017, 215-218). Animals in Nordic and Germanic tradition where thought to be a connection to the other world, involving the animalistic style in the creation and legitimisation of (elite) power (Hedeager 2008, 13; Hedeager 2011, 83-85). From this plate brooches, the *bird brooches* (fig. 10) are frequently found within the Frankish area during the Merovingian period (Heeren & Feijst 2017, 215-218). The bird is part of the early stylistic representations and described as 'bird with hooked beak' or 'bird of prey'.

They are thought to represent eagles or ravens, birds with a distinct position in Norse and Germanic mythology and a traditional *fylga*[10] animal within the shamanistic world view (Hedeager 2011, 86-89) The simplest bird brooches are made from a copper alloy, with a little silver. However the brooches which contain a single garnet in the eye of the bird, they are more frequently made of gilded silver. Stylistically different are the bird brooches which contain garnet cloisonné; these are bigger than the former and are more extensively decorated. The bird brooches are

Figure 10. Example of a bird brooch (after Nicolay 2014

dated to 470-530 AD, which is also more or less correspondent for the other types of figurative plate brooches. The bigger and more elaborate bird brooches are found for an extended period of time, up to end of the 6th century (Heeren & Feijst 2017, 215-218).

S brooches

S brooches, as the term implies, are shaped in a way that it resembles an S and are also part of the figurative plate brooches (fig. 11). It is suggested that these brooches in Medieval times were meant to be an abstract depiction of snakes, linking to the Nordic figurative tradition, because the pin at the backside is sometimes positioned in a way that the S would be worn mirrored, or even horizontal (Hedeager 2011, 85-86; Heeren & Feijst 2017, 220-222). These brooches are quite homogenous in shape and size but do have a lot of small

Figure 11. Example of an S brooch (after Nicolay 2014)

variations. The most important stylistic difference is whether they are adorned with garnets inlays or not. These inlays can be single stones at the outer ends of the S shape, but examples inlaid with multiple garnets are also known (cloisonné). S brooches are found during the 6th century. It is important to note that they are widespread within

---

[10] An 'externalised soul' or the embodiment of personal luck (**Hedeager 2011, 83).**

Langobardic Italy and Southern Germany, but that in our research area they are mainly known from the Dutch river area. The examples found here appear to be of a 'simpler' variety (Heeren & Feijst 2017, 220-222).

Other types of garnet inlaid objects

Other types of objects containing garnet inlays are found in far lesser quantities than the brooches. These types contain predominantly jewellery, such as earrings, pendants, hairpins, and rings (fig. 12). Other types of adornments that do not directly fall under jewellery are belt buckles, belt mounds, bag mounds, saddle mounts, and sword mounds (Behrendt and Mecking 2013, 191).

When analysing the material found in our research area, the above presented knowledge of the different types and styles, combined with burial and gender theory, can be used to examine how garnet adorned objects are used to communicate gender associations within the social strata of the early medieval period.

Figure 12. Examples of different types of objects pendants, ring and earrings (after Nicolay 2014; Faider-Feytmans 1970)

2.3. Research until now

2.3.1. Typological

The first overview of Merovingian objects is called "Handbuch der deutschen Altertumskunde" and was assembled based upon research in the North German regions by L. Lindenschmidt in 1880-1889. In 1935 the first general applicable chronology was published, for the grave goods were dated with the use of coin finds. This work from J. Werner "Munzdatierte austasische Grabfunde". These and other publications of early medieval research were mainly typochronological descriptions of cemeteries. It was until 1958 that the first review of a larger area was published by K. Böhner. "Die fränkischen Altertümer des Trierer Landes" contained a first classification and dating of garnet disc brooches, and a suggestion of the way these brooches must have been used (two on the chest or on the shoulders) was done (Lindenschmidt 1880-1889 in Fehring 2015, 4-5; Werner 1935 in Fehring 2015, 4-5; Vielitz 2003, 10; Böhner 1958 in Vielitz

2003, 10). A comparative study of two garnet disc brooches found within a tomb in the cathedral of Cologne 1959 was published in 1960 by O. Doppelfeld. Based upon this publication Böhner proposed in 1967/1968 that is was not until the first half of the sixth century that the garnet disc brooches are present within female graves (Böhner 1958 inVielitz 2003, 10).

A first basic chronology of the garnet fibulae was created by the mapping of the cemetery of Cologne-Müngersdorf by U. Koch (1968). He found that the smaller brooches were found within the older part of the cemetery than the larger fibulae (Koch 1968 in Vielitz 2003, 11). He improved this chronology in 1977, when he used stratigraphy to provide a typological and chronological study of the garnet brooches of the cemetery of Schretzheim (Koch 1977 in Fehring 2015, 4-5; Koch 1977 in Vielitz 2003, 11). His work "Das Reiengräberfeld bei Schretzheim" is still used as reference.

With "Merowingerzeit am Niederrhein" Siegmund (1998) published a new chronological analysis based upon all the available archaeological material within the Rhine land. He created a typochronology of the material culture between AD 400-740, by dividing this time period in eleven phases of 20 till 45 years. For the garnet disc brooches three different types are established, based upon the rings of inlays present (Siegmund 1998). A lot of different typological research has been conducted since then, creating a variety of typologies and overviews of different sites. The research of Vieliz (2003) is one of the more important works, also for this thesis. She conducted a typological research of the disc brooches from Germany (60%) and the area west of the Rhine (France and Benelux 30%) and some examples from surrounding countries. She established eight main types, based upon a combination of the amount of garnet zones (one, two) and the basic shape (eg round or rosette). Another factor is the presence of filigree at the variable zones of the brooch (Vilitz 2003). She concluded that the smaller brooches are the oldest, followed by the brooches containing more zones of garnet inlays. The brooches containing filigree next to the garnet inlays are the youngest (Vilitz 2003, 129). Also, she shortly refers to the disc brooches as being gendered female: "Gegenstand dieser Untersuchung sind Granatscheibenfibeln, die Bestandteil der frühmittelalterlichen Frauentracht waren" (Vilietz 2003, 11). In her descriptions she mentions that the garnet disc brooches serve mainly to fasten clothing and are found in pairs or as single finds, based upon the style in which they were worn. When they are found alone, the function of clothing garments is still possible, especially when found

combined with, for instance, a bow brooch, for they can be used together (Vierfibeltracht) marking a style transition in the late 6th century (Vilietz 2003,103-121).

Another extensive work describing the material culture of the early medieval period, is "Kunst der Völkerwanderungszeit" by H. Roth (1979). His work however is less focused upon typochronological aspect, but more in the transfer of styles and how they got here in the first place. He describes the artform dominant in the early middle ages as one of *Kleinkunstprodukte* with amuletic instead of monumental value. He discusses a scala of artisanship's that to his regard are part of this transition, but states the of the early medieval goldsmiths is the most the influential one. Skilful decorated weapons, belt fittings and pieces of horse gear disposed within the grave are part of this artform, which eventually got lost (Roth 1979, 35-36). When Roth mentions the objects inlaid with garnets, he describes two different types, those with garnets set in metal chases, and those set within surface covering cells (Roth 1979, 39-40). The upcoming of this style within the northern regions is linked to the connection with the Romans by Roth twofold. The different lifestyle that got introduced, along with the practice of gift giving called for a more elaborate art style. There are however to many of these objects found to all be gifts, and therefore he concludes that the materials and the technological knowledge must have been imported as well. Furthermore, people returning from the roman front were wearing these brooches as a symbol of their status, creating an influx in the demand of those objects (Roth 1979, 36). This is also the reason he states, that the garnet import shifts from Asia Minor to Bohemia, for the new clients of elaborate goldsmith work where concentrated around the northern black sea coast (Roth 1979, 39-40). Roth accredits the origin of the characteristic garnet with gold style to the polychrome style popular with the Carpathians, the Goten, Alanen, Sarmaten and the Huns. This style combined gold with colourful inlays of gemstones next to filigree, pearls or millefiori. In the beginning these inlays were set in metal chases (boxed setting) which limited the possible shapes of gems. This changed with the introduction of the cloisonné technique. A lot of different shapes for the cells were developed, but the use of multi coloured and different materials is replaced with the use of garnets within the regions of the Western European Germanic tribes. The use of cloisonné polychrome is however still visible upon the finds of the grave Childeric and Sutton Hoo (Roth 1979, 39, 78-83).

2.3.2. Technological

The work of Roth (1979) already mentioned another aspect of garnet inlay research that developed over the years: technological studies. One of the most detailed still widely used works to this regard is the work of B. Arrhenius (1985). For her study "Merovingian Garnet Jewellery", she focusses on questions of the manufacturing process and diffraction analysis of both the garnets and the cements used. Her study shows three different garnet sources based upon the physical qualities of which two are situated within Central Europe and from the Black Sea area. Indian garnets she does not recognize within the material, for which she suggests is a result of the need for garnets that could be cut into thin plates (Arrhenius 1985). A detailed analysis of the different garnet shapes is discussed within her work and she proposes the hypothesis that the garnets were cut in central places, based upon templates, but that the objects themselves were assembled by more local goldsmiths (Arrhenius 1985). She proposed that the composition of cement could be used to determine the workshop in which the object was created (Arrhenius 1985, 96-161). This idea however is not taken up upon in following research (Sorg 2011, 150). For objects of high quality she furthermore suggests that the garnets were already assembled in a 'emblemata', which then could be mounted upon an locally made object (Arrhenius 1985). This is however currently under debate since the finds of raw garnets in settlement settings, including recent finds in Gamla Uppsala (Ljungkvist *et al* 2017).

Roth (1979) already mentioned the two different styles of garnet inlays that can be found within the early medieval period. Arrhenius her study of manufacturing techniques further defined these different mounting techniques[11]. Both the single setting and the cloisonné technique are present within the Germanic area, but she suggests the less qualitative technique of band setting was mainly used during the fourth and fifth century. During the late sixth century however, she poses that craftsman started to take up the more qualitative Roman styles of band settings again. This is also the moment she suggest the presence of garnet workshops within the Merovingian region (Arrhenius 1985, 77, 127-187).

Whether the mounting technique of cloisonné is a late Roman art form or that it is an art form that originates in the Near East, Scandinavia, Asia or Germania is a subject still under debate (Calligaro 2004, 109) but Arrhenius acknowledges the theory of Roth

---

[11] For a detailed description see chapter 2.2.

(1979) that this style was introduced into Western Europe as a fully developed technique (Arrhenius 1985, 17-18). She founds this theory by the observed absence of an evolutionary process in the styles and techniques. She suggests this lack of evolution could also be seen as an indication that garnet objects of high quality were only assembled at request, for economies of scale are a big incentive for innovation (Arrhenius 1985, 17-18).

Arrhenius also emphasised the importance of high quality garnet work that could be used by the social elite to establish alliances by the practice of gift giving, a suggestion based upon the presence of cloisonné jewellery from different workshops within the same cemetery (Arrhenius 1985, 188-198). She mentions the occurrence of garnets in the early phase upon objects that can be related to status, such as arm rings, neck rings and brooches resembling the Imperial brooches[12]. She describes that around 475 AD new types of garnet brooches emerge which are related to woman, such as disc brooches, bird or eagle brooches and bow brooches (Arrhenius 1985, 188-198). The during the eight century emerging disc on bow brooches in Scandinavia are according to Arrhenius meant as a amulet or a status symbol, for some of those brooches are more than 30cm long. They are thought to be worn by woman because of contemporary amulets which depictions of woman wearing these brooches upon their upper body. Combined with the garnet inlays present upon these objects, Arrhenius (1969) draws a parallel with the mythical jewel or necklace from the goddess Freya, called *Brisingamen*, which deriving from old Norse *Brising*r means so much as flaming jewel (Arrhenius 1969 in Arrhenius 1985, 198).

2.3.3. Chemical

A returning theme in the studies of archaeological garnets is the study of their provenance, in order to research the continuity of trade routes. Due to their hardness and their resilience to alteration they are very useful tracers. In the first years of this research theme, the used methods were those of gemmology, such as in the work of Arrhenius (1985). Gemmology used the physical properties, both optical and mechanical, to identify the gemstone. This type of research however is not always possible, for the garnets are frequently mounted within brittle objects. Furthermore,

---

[12] A reference to large brooches depicted on roman coins, medallions and mosaics, in the shape of a cross bow brooch and a round brooch with an elevated inner panel thought to be related to-, and being gifts from the emperor (Arrhenius 1985, 196).

these studies do not result in exact provenances, for they are inadequate to grasp the complexity of the chemistry of the garnet (Arrhenius 1985; Calligaro 2004; Mathis *et al* 2008; Périn *et al* 2006). Between 2001 and 2006 a new study into garnet provenance was realized in Paris by the museum of national antiquities and the C2RMF (Centre de Recherche et de Restauration des Muse´es de France).

This study, conducted by P. Périn, F. Vallet, T. Calligaro, D. Bagault and J.-P. Poirot has analysed over a thousand garnets found within France and is currently the most complete study available (Calligaro 2004; Périn *et al* 2006). By the use of non-destructive methods of PIXE and I-Raman spectrometry[13] they were able to identify five types of garnets that originated from different geographical locations. They were able to connect two types of almandine (type I and type II) to two different sources within India, which confirmed the leading hypothesis that India is the dominant source of garnets used in Merovingian times (Calligaro 2004; Périn *et al* 2006). The type III garnets were identified as garnets from a very unusual composition, which originate from Ceylon (Sri Lanka). These garnets are called rhodolites and where only found upon a few early artefacts. The researchers note that this is the type of garnet they often observe set in Roman and Byzantine jewellery (Calligaro 2004; Périn *et al* 2006). The objects dated to the end of sixth beginning of the seventh century were observed to contain garnets that are not present upon the earlier material. These pyrope garnets originate from Europe and for type V it is specified these come from Bohemian deposits. The geographical location of type IV is still under investigation. (Calligaro 2004; Périn 2006 et al 69-76). About the composition of the garnets upon the objects, the researchers note that most artefacts contained a mix of two or three types of garnets, with the combination of type I and type II being the most frequent. Objects that were inlaid with garnets originating from only one source are present, but for most objects the sources were combined (Périn 2006 et al 74). A sixth cluster of garnet material was added in 2010, when the group of Scandinavian garnets was added to the clusters by research of H.A. Gilg, N. Gast and T. Calligaro but the other clusters remain unaltered (Gilg et al. 2010).

Following this extensive research of Calligaro, different case studies were conducted such as the research of Šmit *et al* (2014) in Slovenia and Mathis *et al* (2008) in Belgium. The study of F. Mathis, O. Vrielynck, K. Laclavetine, G. Chêne and D. Strivay, analyses the garnets found at the necropolis of Grez–Doiceau. They noted that, opposed to the research in France, their assemblage was quite homogeneous in composition and,

---

[13] Discussed in chapter 2.2.2.

with a few exceptions, all the garnets originated from the same source (type I) (Mathis et al 2008).

2.3.4. Weltweites Zellwerk

The garnet objects are characteristic for the early medieval period and intensely studied, but one of the research themes that always comes second is the cultural significance. Since 2014 a team of international researchers connected to the Römisch-Germanische Zentralmuseum of Mainz has started a research projects called Weltweites Zellwerk. This research focusses upon "changes in the cultural significance of early medieval gemstone jewellery considered against the background of economic history and the transfer of ideas and technologies". The research will engage in the questions of why the cloisonné style decreases in the 7th century to be replaced with simpler varieties containing bohemian garnet, whilst in Anglo-Saxon England and Scandinavia the number of cloisonné increases, and what happens at the eastern periphery of the Frankish Empire. Central to their study is to determine how the European economic zones were structured during the seventh century, in relation to their external trading contacts, which will be addressed from a multidisciplinary point of view (https://zellwerk. hypotheses.org/).

2.3.5. This thesis

As mentioned in paragraph 2.3.4. the social significance of garnet adorned objects is a topic that is mainly addressed as annotation. This can also be concluded regarding the aspect of gender. The use of gender studies within archaeology has changed significantly during the past 30 years, and the study of the implications of gender for the organization of society have become more important. However noted within several studies that the garnets are found within male or female graves, the social implications and possible meaning and reason of these gender patterns of garnet inlaid objects are seldomly subject of study.

The focus of this thesis will be the changes in gender representation of garnet adorned objects in Frankish-Merovingian Europe during the fifth and sixth centuries and the observed shifts to this regard in the seventh century in relation to the North sea cultures from Anglo Saxon England and Scandinavia. The social and cultural significance of these changes will be discussed in view of recent gender and burial theory.

The Netherlands is located upon the periphery of the Frankish-Merovingian Europe and the North sea cultures from Anglo Saxon England and Scandinavia and therefore, hypothetically, could have been a link between these two cultural zones. The dataset used for this thesis covers the Benelux and the German Rhineland and could therefore add some viable information to the current research of the Weltweites Zellwerk.

2.4. Concluding remarks

As seen in this chapter, the early Medieval period was a period of profound change. The material culture reflects that, both in mortuary practices as in the use of (garnet) objects. A lot of different styles and techniques regarding garnets are discussed in this chapter, as well as the current state of research, upon which this thesis will partially expand in the following chapters. The next chapter will discuss the theoretical framework in which the study of the garnets for this thesis will take place. This chapter will discuss both the theory to interpret mortuary practices and the theory of gender roles and material culture. Discussions about the usefulness of the dataset and the dataset itself will be discussed in later chapters.

Chapter 3: Gendered patterning in the Mortuary Record

Whereas the last chapter mainly dealt with the general changes in society during the Roman and post Roman period, as well as give an introduction and context to garnets and their use in objects, this chapter is more concerned with burial practices and associating gender patterns. This chapter, therefore, will mainly extend upon the brief introduction given in paragraph 2.1 and describe the context and theory of burial practices in relation to gender representations.

When archaeologists study past societies, one of the main contexts they encounter is one of a very distinctive nature: burials. A substantial amount of the archaeological record consists of a variety of sequential events, but the act of burying the dead is usually an intentionally and structured one. It presents archaeologists with the opportunity to study both the material culture and the performance of mortuary practices, providing some insight in the cultural norms about how to perceive someone in death (Ekegren 2013, 174,177; Härke 2011, 104; Härke 2014, 42). The presence of the physical remains gives an extra dimension to the mortuary context. This close link to the individual gives the opportunity to study a remnant of their identity in life and comparing those with others, making burial archaeology one of the focal points in gender research during its earliest stages in the twentieth century (Conkey and Spector 1984; Sofaer and Sorensen 2013, 528). Objects found within the burial context can therefore be used as proxies in the study for societal and social ideologies of the respective communities, which includes the highly complicated topic of gender (Ekegren 2013, 175, 177; Härke 2011, 104; Sofaer and Sorensen 2013, 528-529).

When studying the Early Middle Ages, the importance of burial archaeology is twofold; the grave-goods custom practised in Europe at this time is quite abundant, and medieval cemeteries are the main archaeological context found for this era (Härke 2014, 42). Because the majority of the finds analysed in this thesis were found in graves and gender plays an interesting role it is appropriate to introduce in this chapter a number of relevant theoretical considerations upon the study of grave goods, as well as a short review of previous and contemporary approaches on gender research within archaeology.

3.1. Mortuary practices: material culture and meaning making

The term *grave goods* in archaeology refers to all objects found within a grave and therefore includes a large range of items. These can vary from objects used during

sacrificial offerings or feasting, to objects used to handle the body. Remnants of the clothing of the deceased and deliberately deposited objects or 'gifts' are included as well (Ekegren 2013, 175 ; Härke 2014, 41). These grave goods have been used by archaeologists to discuss a wide variety of aspects of human life, such as economy, (religious) ritual and cosmology, and gender roles. The presupposition that the social status, such as rank and wealth, of the deceased was represented with the number and quality of the grave goods, had been accepted for a long time. So was the theory that social hierarchies within a community, or even a whole region, could be extracted from the differential wealth represented within graves. Furthermore, it was anticipated that the (regionally) different styles of artefacts could not only be used for social, but also for ethnic extrapolations (Ekegren 2013, 175; Härke 2014, 42,47; Loveluck 2013, 7; Theuws 2009 285-293; Trigger 2006, 211-244). Especially from the end of the nineteenth and the early twentieth century, the occurring regional differences within the styles of the material culture were used to identify 'peoples' in order to create a feeling of nationality (Childe 1929 in Härke 2014, 42; Halsall 2014, 515,516; Trigger 2006, 211-244). Burials were approached as if the result from one single event, containing all the necessary information to reconstruct social roles and ethnic identities from the past (Ekegren 2013, 176; Härke 2014, 46). These earlier studies were critiqued for being heavily influenced by standard thought processes of their time, such as racial divisions, colonialist ideals and professional elitism (Trigger 2006, 452). Newer theoretical debates, known as post-processual archaeology, are more critical towards this emphasising of the relation between grave goods and the identity and social status of the deceased, specifically when ethnic interpretations are involved (Ekegren 2013, 176; Härke 2014, 42; Halsall 2014; Sofaer and Sorensen 2013, 530; Trigger 2006, 452-455). Those scholars opposed the assumption of processual archaeologists that the material culture found must inactively represent the social organisation, because the lack of reasoning within the processual approach about why a certain combination of objects or actions were used to represent identity and rank. They suggested burials should be regarded as an active attempt of the people surrounding the deceased to confirm and establish such a social reality (Ekegren 2013, 176; Halsall 2009, 125; Härke 2014, 53-54; Loveluck 2013, 7; Trigger 2006, 452,453). So, when archaeologically studying the identity and social status of a person through their post mortem related material culture, there are already a vast range of theoretical frameworks present that effect the given interpretations. As a result, one should always keep the theoretical stance of the archaeologist in mind.

Material culture encountered within a mortuary context mainly is divided in two general categories: objects that have a direct link to the dead body, such as remnants of the clothing or items part of the attire such as brooches and jewellery, and those that are separately incorporated within the burial, such as weapons or pottery (Ekegren 2013, 175; Härke 2014, 41,43; Price 2008, 260). These two categories however are exchangeable, for a brooch can also be a gift, and are therefore difficult to maintain, posing extra interpretive challenges upon funerary remains (Ekegren 2013, 175). As mentioned before, burials are one of the few archaeological contexts consisting of a set of intentionally and choreographed activities, possibly endowing the funerary objects with a meaning that extends beyond the functional properties they had during life. They can be used as proxies of the perceived persona of the interred, or to (re)construct social relationships (Ekegren 2013, 175, 177; Härke 2011, 104; Hedeager 2011, 137; Theuws and Alkemade 2000, 407-413; Sofaer and Sorensen 2013, 528-529). To explore these intangible properties one must ask themselves how this meaning can be established and how this is interpreted by the society that performs the mortuary practices. It is imperative that the study of the specific burial practices considers their societal context (Ekegren 2013, 177; Härke 2011, 104; Härke 2014, 53; Trigger 2006, 452,453). With the critique of the post-processual archaeologist upon the universal explanations and the static identities ascribed to funerals by the processual archaeologists, the focus shifted towards the importance of funerary rites as social ceremonies. It was increasingly stated that the buried are not only individuals as they were in life, but are dead people, who do not bury themselves. The graves and their content therefore are in some way related to the (ideological) transitions brought about by death, in order to cope with the emotional and social loss (Ekegren 2013, 177; Härke 2014, 46,54; Price 2008, 267-270; Sofaer and Sorensen 2013, 530). Ritual practices generally have a template which is socially known and approved and maintained by tradition. This structure is based upon the underlying concept of the ritual, but the understanding and interpretation can vary between practitioners, especially over time. Different forms or reasons for performing the ritual can co-exist without undermining the original thought but, since rituals are procreative, they can also alter the structures in which they originate. This is the process in which (ritual) traditions and their social relevance or meaning change over time (Ekegren 2013, 178-179; Loveluck 2013, 7).

Objects can be an important part of the ritual because the object is connected to the persona in terms of 'meaning making', especially when talking about mortuary

practices (Ekegren 2013, 179; Sofaer and Sorensen 2013, 533). Being an integral part of social processes, the objects become endowed with meaning (object biography) and could be seen as the 'material embodiment' of such a social relationship (Hedeager 2011, 137; Mauss 1990). Therefore, understanding the role of material culture within these practices is of great importance for archaeologists. However, many theories about rituals focus mainly upon the experiences of the participating actors (Ekegren 2013, 179; Sofaer and Sorensen 2013, 533). There are various interpretations for the presence of grave goods, and as the theoretical paradigms of archaeologists change, so do the leading interpretations. Some prevailing possible explanations will be briefly discussed here.

One of the oldest suggested reasons is the availability of items in the afterlife. It was thought that objects deposited in the grave, or buried in hoards, would be available for the deceased in the hereafter, and/or could be used for their passing (e.g. coin for the ferryman) (Härke 2014, 45; Hedeager 2008, 14). References to this practice can actually been found within written sources, and early medieval texts mentioning this custom are the poem Beowulf, Egil's Saga and the Edda (Härke 2014, 45). A different explanation concerns the concept of inalienable property. A tenth century Germanic law code divided personal property in alienable and inalienable parts. Archaeologists suggested that this could explain the deposition of objects in graves (Reinecke 1925 in Härke 2014); items that could not be passed on or sold off had to be disposed of and ended up in the grave (Härke 2014, 45). This explanation however does not take object biography into account, suggesting some objects are only in circulation for one generation. This could be the case for some items, but for a significant amount of grave goods the precise production (or arrival) date is unknown, and they could have been in use for generations before being deposited (Arrhenius 1985, 14-15; Härke 2014, 46; Hedeager 2011, 137; Ekegren 2013, 183; Kars 2012, 109,115,116). Another argument against the applicability of this suggestion for the early medieval burial customs is the practice of re-opening the graves. van Haperen (2013) shows that the grave does not have to be the final destination of an object. The object can be retrieved from the grave and parts, or the whole object, could be reused (Arrhenius 1985, 14-15; van Haperen 2013; Price 2008, 269). This last critical note is also applicable upon the next suggested motive, based upon the concept of *potlatch*, the destruction of one's possessions in order to propagate status and influence within society. The deposition of wealth within graves was suggested by Childe (1945) as being typical for a society with no fixed

hierarchical positions. The representation of the social and economic loss of the deceased was part of a status competition, leading to the competitive display by the mourners (Childe 1945 in Härke 2014; Halsall 2009; Härke 2011, 104). This interpretation should not be mistaken for the earlier mentioned assumption that the quality and number of grave goods are indicators of rank, status and identity of the interred. As often addressed, this interpretation suggests a causal connection between representation in death and the actual social reality, where the former implies an active attempt of the people surrounding the deceased to create, confirm and establish such a social reality, and gain some status in the process (Halsall 2009, 125; Härke 2011, 104; Härke 2014, 47; Hedeager 2011, 144; Theuws 2009 285-301; Theuws and Alkemade 2000, 407-413). Other suggested reasons are: a metaphor for the life or specific event in the life of the deceased, gifts to the deceased, gifts to a deity, remains of the funeral feast, disposal of polluted items (items that have been in contact with the dead), and protection of the living and/or the dead (Härke 2014, 48-51; Hedeager 2008, 14). A last explanation is simply to forget. By disposing of reminders about the deceased, the process of mourning is sustained (Ekegren 2013, 177; Härke 2014, 52). The meaning of grave goods, although presented here as separated categories, is most likely a composition of meanings and motives and is therefore not easily assumed (Ekegren 2013, 184; Härke 2014, 52).

The influence of burials to redefine social relations and identities make a reasonable argument to the importance of analysing gender representation in mortuary contexts. The appearance of gendered identities within a certain society could show something about the awareness of the people left behind, linking the study of death and gender to those of socialization (Geller 2009, 66; Halsall 2009, 125; Sofaer and Sorensen 2013, 533). In early medieval Europe gender differences are evidently present within the funerary context[14], suggesting that the early medieval society had specific notions about sex and gender (Härke 2011, 98).

3.2 Gender representations

Gender has significant implications for the organization of society because it is fundamental to how people relate to others and understand themselves (Sofaer and Sorensen 2013, 528). To reconstruct the gender representations within a past society, a

---

[14] from England to the North Caucasus, among the Anglo-Saxons, Franks, Alamanni, Scandinavians, Slavs, Avars, Alans and others **(Härke 2011, 98).**

common method among archaeologists has been the study of mortuary practices, and more specifically, the objects found within the graves. The study of these is not without difficulties, as discussed earlier, and this also applies to the study of gender through material culture. In the traditional studies, but also later on, universal gender generalisations have been made about which assemblage of objects represented a male or female burial (Engelstad 2001, 6002-6006; Moral 2016, 791; Sofaer and Sorensen 2013, 530 – 532). These associations were based on modern analogies and made without questioning if the concept of sex (biological identity) and gender (social identity) was relevant for the society under study. They also disregarded the question who actually chose the deposited objects and if this was a demonstration of gender identity as experienced by the deceased, or of a social concept (Moral 2016, 791; Härke 2014, 54; Sofaer and Sorensen 2013, 529 - 532). This application of gender upon a certain grave solely based upon the grave assemblage changed a little with the upcoming of the New Archaeology theoretical approach in the 60's. The emphasis shifted from chronological sequences of preserved artefact types toward a systematic investigation of sex and other social variables acknowledged within the burial (Härke 2011, 101; Härke 2014, 43; Sofaer and Sorensen 2013, 529-530; Trigger 2006, 392). Criteria to measure differences in role and status, which were assumed to characterize relations among man and woman, were developed. This resulted in analysing wealth based upon variables such as how much effort was put into the construction of the burial and the alleged quality of objects, established upon the materials used and their scarcity (Sofaer and Sorensen 2013, 530). Up until the 1980s it was presumed that the grave goods found truthfully reflected the biological sex of the deceased (Härke 2011, 103). The debate upon gender arose around the same time the post-processual movement took hold in the archaeological theoretical paradigm. By establishing new procedures and means of discussion regarding mortuary archaeology, the post-processual approach formed a base for gender and feminist archaeology, causing a critical re-evaluation of the concepts of sex and gender (Geller 2009, 66; Sofaer and Sorensen 2013, 530; Voss 2000, 181). From that moment on, mortuary archaeology became one of the significant areas for gender orientated studies, as the material culture was used to try and understand how gender and sexuality are constructed, maintained and changed (Conkey and Spector 1984; Engelstad 2001, 6002-6006; Sofaer and Sorensen 2013, 530).

The leading work in, and often referred to as the starting point of, feminist archaeology is the 1984 article *Archaeology and the study of gender* from Conkey and Spector (1984). The article was very critical upon the use of the essentialist category

man/woman (androcentrism), based upon nature and biology with the universality of a rigid sexual division of labour at its foundation. This critique regarded not only the female representation within the archaeological record but was much broader; they suggested that gender and sex should not be regarded as defined categories, but were more a social construct, changing over time. Conkey and Spector introduced new approaches for archaeological interpretation in order to distinguish material traces of gender roles and relations and called for gender-inclusive models of the past. In doing so they used feminist theory in archaeology to challenge the biased sexist viewpoints common at that time, which affected the archaeological interpretations (Conkey and Spector 1984, 1-38; Engelstad 2001, 6002-6006; Geller 2009, 66; Moral 2016, 788-789; Sofaer and Sorensen 2013, 530; Voss 2000, 181-182). The emerging of gender in archaeological studies sparked another kind of theory, until then unknown within archaeology: queer theory. The name queer in this context refers to the rejection of sexual categories as natural condition and therefore taxonomic, as they were established during the sexuological debate in the late eighteen, early nineteen hundreds (Moral 2016, 789; Voss 2000, 184). Both these theoretical approaches were important for the means identity was perceived and studied, but their origin was not associated. They arose independently, queer theory within sexual politics and feminist archaeology within academia (Voss 2000, 185). In current archaeological studies, archaeologists are much more aware of the complexities regarding gender. They are more careful about applying 'male' and 'female' association upon grave goods, for the notion that the connection between objects and peoples can culturally vary (Härke 2011, 101; Härke 2014, 43; Sofaer and Sorensen 2013, 532).

As discussed earlier, there are several differences between the reality manifested within the material culture found within funerary contexts, and the social reality in life, which is also demonstrated by anthropological studies. Burials are an important instrument of representing, establishing or redefining social relations and identities, for the objects and rituals used are a part of 'meaning making'(Bloch and Parry 1982 in Ekegren 2013, 176; Geller 2009, 66; Halsall 2009, 125; Theuws 2009; 295-296; Sofaer and Sorensen 2013, 533). A gender display within a burial can therefore be used to make assumptions about the gender identity of the deceased, but even more about the awareness of the people left behind, for they are the ones that actively participate within the mortuary practices (Härke 2014, 54; Sofaer and Sorensen 2013, 533). This consideration is especially important when dealing with burials in which the grave good assembly seems to be opposed to the biological sex of the individual, as

known for some cases in the early middle ages. An explanation for this phenomenon could be that representing the social identity and status of the deceased was of more importance than a depiction of one's biological sex (Geller 2009, 67-68; Härke 2014, 54 Hedenstierna-Jonson et al. 2017, 858). Archaeologists dealing with mortuary practices therefore need to question whether gender and sex are interconnected, or that it is very well possible that the biological sex and the cultural gender representation differ. This realisation challenged the existing practise of ascribing gender based upon a particular kind of mortuary assemblage and archaeologists became increasingly aware of the problem of circular argumentation and the patriarchal angle that possibly biased the identification of sex and gender (Härke 2011, 102; Hedenstierna-Jonson et al. 2017; Sofaer and Sorensen 2013, 530 - 531). Despite these concerns, the material assemblages accompanying a person in death are still seen as effective ways of communicating gender. It is not, however, the only way differentiation can be implied within the grave, the entire construction of the grave could bear meaning (complexity, spatial arrangement), and also the body itself (manipulation, preparation) can be used as a communicator as well by the positioning within the burial (orientation, pose). The variability is substantial and as mentioned when discussing the (social) meaning of mortuary practices, can be focused upon different actors, such as the deceased, the mourners or intangible matters such as the afterlife (Ekegren 2013, 176; Sofaer and Sorensen 2013, 534-535; Theuws 2009 293-297; White and Folkens 2005, 50).

The study of gender representation within societies from the past is most sufficient and representative when excavating larger cemeteries, where it is possible to compare the results and create a framework about how different aspects of identity were articulated within that society. Comparison of data from a variety of burial grounds within the same region can also add to this knowledge. Without this framework, it is very difficult to assume something about gender. Especially because ethnographical studies show that there are societies in which gender categories did not indicate a social distinction and not all societies with gender roles also display these within the burial. Even within our modern society we almost completely ignore gender differences within our burial tradition. So, without establishing a general indicator it would be very difficult to reveal something about why gender would be obliterated or emphasised, enlarged or normalized within particular burial traditions (Engelstad 2001, 6005; Härke 2011, 98; Moral 2016, 791; Sofaer and Sorensen 2013, 531, 534-535). For the early medieval period, the burial evidence displays a distinctive gender representation all over Europe. There are some regional distinctions, but overall, the gender differentiation is present

within the material culture, suggesting that they had a specific idea about sex and gender, and felt the necessity to display this within the burial context. One of the researchers supporting this view of the early medieval burial custom is Heinrich Härke (2011) who conducted a case study of Anglo-Saxon burial rite, based upon all the available burial data. He discovered that the representation of gender within the graves was mainly accomplished by the garments or items part of the attire and additional grave goods, and that there was quite a correlation between the biological sex and the displayed cultural gender (Härke 2011, 101-102). The underlying reasons of why a society chooses to represent gender within the burial are not clear cut and are mainly based upon a combination of theory and interpretation (Härke 2011, 102; Sofaer and Sorensen 2013, 531, 535). For the early middle ages one of the explanations is that due to migrations and significant mobility, cultural, social and political margins became less clear, and so social roles, related with gender, had to be redefined. So, the emphasis on gender within the burial could be a result of less distinct gender roles in life (Childe 1945 in Härke 2014; Halsall 2009; Härke 2011, 102-104).

The study of Härke (2011) used osteological sexing in order to validate the gender interpretations of the older research, based upon the grave goods alone. The practice of using the skeletal information became common after the early critiques about androcentrism within archaeological studies, in order to provide some objective data to gender archaeology. This may seem as a very reasonable way of gravitating the data, however, the osteological analysis is not without complications. It focuses upon the biological differences between man and woman, related to the sexual divisions of labour, persisting as natural, instead of culturally variable (Geller 2009, 67-68; Härke 2011, 103; Sofaer and Sorensen 2013, 532; White and Folkens 2005, 385). In general, the smaller and gracile osteological elements are determined as female, and the robust as male. This sexual dimorphism is however not abundant in all the skeletal elements[15] and does not correct for normal individual variation, or variation between populations (White and Folkens 2005, 386). Furthermore, when determining the gender of an object by its connexion to a sexed body, this undermines the possible cultural affiliation to gender, and returns it to a biological category (Sofaer and Sorensen 2013, 532). Contradictions between the gender typological objects and the osteological determined sex of the individual are often questioned and are not always seen as a result of the

---

[15] The elements of the skull and pelvis possess the most distinct sex differences (White and Folkens 2005, 386)

identity of the interred, or are explained by a third and fourth gender (Härke 2011, 103; Hedenstierna-Jonson et al. 2017, 857-858). The use of this third gender category has however been debated, because it has the same pitfall as the old practices; it confines everything non-normative to our standards into an established category, instead of studying the possible dynamics within a (non-western) society (Moral 2016, 791). Because there are no ethnographic observations of object-person relations available for the archaeological material within the society of interest, an archaeologist cannot disassociate the object found from the biological category of the diseased. As mentioned before, the gendered design of the mortuary record should not be studied as one single context, but ought to be compared to different burials from the same region or burial ground, in order to interpret the social meaning (Sofaer and Sorensen 2013, 532 -533).

One of the more recent additions to gender related mortuary studies, is the scientific analysis of the human bone material. Archaeologists have started to investigate the applicability of these practices, such as DNA, stable isotopes, genome sequencing, skeletal pathology and morphology, within the study of gender in mortuary context. These techniques are very promising because of high accuracy, regardless of the age of the individual or the preservation of the material and lack the potential biased assumptions about gender associations or sex determination (Geller 2009, 67-68; Hedenstierna-Jonson et al. 2017; Sofaer and Sorensen 2013, 535 – 536; White and Folkens 2005, 386). They provide a solid way of comparing individuals and can tell something about the actual life of the interred, perceiving the body as a new 'material' category. As a result, these techniques offer new means of investigating sex which can complement the study of grave goods more accurately than morphological sexing alone, and may result in new insights regarding gender in the past (Hedenstierna-Jonson et al. 2017; Sofaer and Sorensen 2013, 535 - 536).

In this chapter we have discussed both mortuary practices and (their relation to) gender patterns more in depth. To discuss the theory of mortuary practices and gender patterns in relation to the data set, we must first discuss the possibilities and problems of our current data set. This will provide a better understanding of the scientific usability of the data set, as well as give insight to the value of the results of the research done in this thesis. It will also provide insight into the relations we can realistically make between the theory of this chapter and the data set of chapter 5.

Chapter 4: Methodology and Limitations, mainly due to conservation

The research area contains diverse landscapes which are dispersed over several, present day country borders. Each landscape has its own geomorphological processes and history of cultural use, which influenced the preservation of the archaeological material. Combined with the different policies regarding archaeology and the corresponding conservation of archaeological material, this adds some limitations to the available data that needs consideration. This chapter will describe the practical limitations, the process of data collection, the sources that are used and the decisions made.

4.1. Collecting data

During the research project called 'Byzantium in the North' (2015) in which I participated, data was collected in a database and converted into distribution maps using ArchGIS in order to demonstrate that oriental objects are widely represented in Merovingian archaeological material. This resulted in a nearly complete[16] graphic overview and documentation of the presence of oriental objects in known Merovingian sites (Auzina *et al* 2015, 12). The maps with relevance for the current research aim will be used in this study, so a short description of the process will be presented in the following paragraph (4.1.1.). The collected data for the 2015 research is also used for this thesis, but some alterations had to be made, as will be discussed (4.1.2.).

4.1.1. Early medieval site distribution in the research area

To represent the general distribution of all known early medieval sites (cemeteries, settlements, churches, hoards, stray finds) and the correlation to the geological depositions, a physiographic representation of the fifth till eighth century AD was used as base map upon which the spatial data was plotted (fig. 13) (Auzina *et al* 2015, 35-37).

---

[16] This overview is not restrictive

The research area stretches around 70 000 km2, currently known as the Benelux and the German Rhineland. As a consequence, the spatial data was collected from different national geographic projection systems. Furthermore a large amount of data did not incorporate coordinates. For these sites and finds, geographical coordinates of nearest inhabited place were identified. In order to correct for the different national geographic projection systems, the coordinates were transferred into the world projection WGS84 system (Auzina *et al* 2015, 35-37).
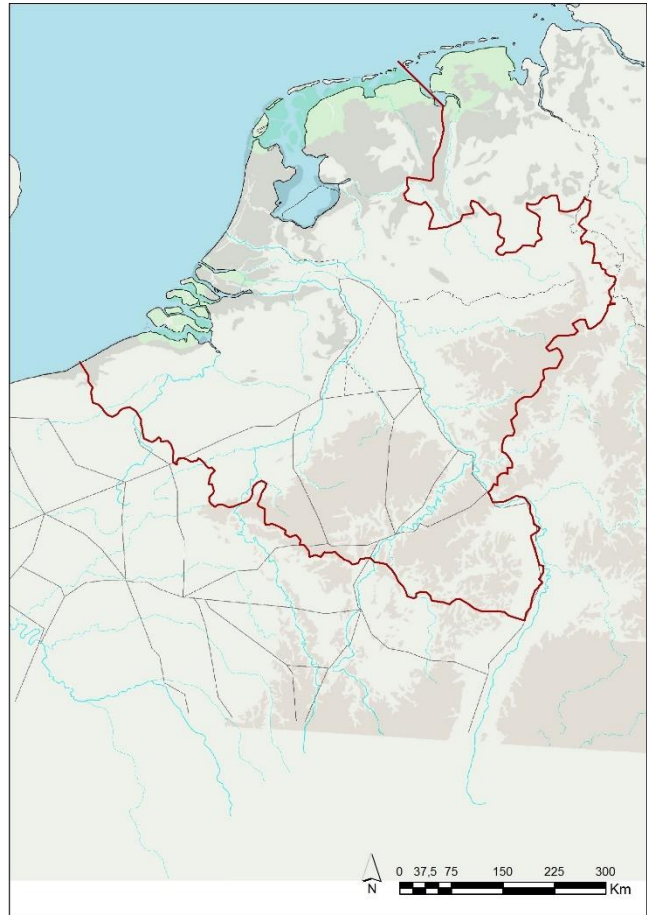

Figure 13. The research area containing the Benelux and the German Rhineland. (map by D. Auzina 2015 after F. Theuws)

4.1.2. Database

Public sources (e.g. museum catalogues), excavation reports and thematic publications are used. Consequently, the data set is influenced by the availability of these publications. For example, catalogue publications for Belgium and Luxemburg were less available than for the Netherlands (e.g. Knol 1993) and Germany (e.g. Siegmund 1998a) (Auzina *et al* 2015, 35-37). Besides the availability, intensity of research within an area is another influential factor. The concentration of research, for instance within presently densely populated areas, can lead to a distorted image of the available archaeological data and consequently bias our understanding of the medieval level of occupation. (Auzina *et al* 2015, 35-37; Berendsen 2005b,185). Furthermore, the research area consists of different countries and different policies regarding archaeological excavations and publications. For instance the Netherlands has the availability of the IKAW, a map of archaeological prognosis, based upon the assumed correlation between the condition of the soil and the cultural use and history of the landscape (Berendsen 2005b,191-192) whereas the other countries do not. Additionally, the different countries wield diverse publication obligations, with the

result that some archaeological data has never been sorted out and published (Vrielynck 2015, pers. comm. in Auzina *et al* 2015, 35-37; Berendsen 2005b,185)

Something else that has to be stressed here is the age of the publications and the time frame in which (most of) the excavations were conducted. This provides a dual bias that should be taken into account. Firstly, some of the earliest records used originated from the early nineteenth century and are 'excavations' conducted on account of the land reclamations. The context that is so important for archaeological interpretations is mainly neglected in these accounts (Auzina *et al* 2015, 38). Secondly, the definition of garnet (chemical or physical properties), and their given names, have varied. This does not necessarily produce a bias, for the Merovingians did not use chemical markers either, but researchers may disqualify 'garnet like' inlays, such as red glass, whilst during Merovingian times this may have been an acceptable surrogate. Therefore, the choice has been made to count every inlay that is labelled with a historically known term for garnet, or which specifies 'red' in the description. In some publications however, only pictures were displayed without any further notifications. When colorized, all the red inlays were counted, but when presented in grayscale, the number of inlays was estimated based upon similar objects. Therefore the number of inlays presented within the database is the minimum number of possible inlays.

The amount of garnets used upon an object and the material of both the garnet and the object are noted within the database, for the perceived value of an object is suggested to depend upon the quality of the materials used and the quality of the handiwork (Sorg 2011, 138; Quast 2012,321). Garnet as a raw material is easy to transport, for they are small and can be transported in high quantities along different types of imports. This could imply that the presence of a garnet in itself does not determine the value (Arrhenius 1985 195; Quast 2012, 321). Objects which contain a lot of garnet inlays, demand a larger influx, especially when you take into account the amount of objects ending up in burials (Calligaro 2004, 109; Quast 2012, 321-322). Furthermore, the production of these objects call for more time, even when the garnets are pre-cut. The mounting of an average cloisonné brooch (around 12 inlays) is estimated by Arrhenius (1985) to take about a day. The cutting of the garnets however are more time consuming. Four straight edged garnet slaps will take around a day to produce and the production of garnets in varied shapes can take from one day up till several days. Objects with exquisite patterns therefore take more time and call for different techniques, adding possible more value to an object (Arrhenius 1985, 195-

196). It is also suggested that objects with a high quality originate from the Mediterranean and are therefore imported as a finished objects, whilst those of a lesser quality are thought to be assembled in the Merovingian kingdom, for no technological evolution is identified after the late Roman period (Arrhenius 1985, 15-18; Sorg 2011, 138).

Alterations

The 2015 research was conducted with the objects as the independent variable, and the database was structured as such. In order to make the database suitable for the research conducted within this thesis, some alterations had to be made.

The information regarding the context type was extended. Grave numbers from the original report were added. When not available, the context was given a unique ID by adding a G. When more graves within one site did not incorporate a grave number a number was added (G1, G2, etc). The definition of stray finds was redefined; objects found within an archaeological site, for instance a cemetery, of which the exact context was not available were classified as single find. The objects of which no archaeological context is known are mentioned as stray finds. To provide those with a unique ID they were labelled A, B, C and so on.

The object types were categorised as *Brooches, Weapons, Adornments* and *Other* and these labels were added to the database. *Weapons* incorporated the objects noted as sword mount, spatha or part of a weapon. *Jewellery* incorporated the objects such as earrings, pendants, hairpin and rings. Objects who do not directly classify as jewellery but as part of body adornments were labelled a*dornments*, such as the belt buckles and belt mounds. The *brooches* category incorporate sub categories such as the *disc brooches* (round, rosette, umbo), *bow brooches* (disc on bow) and the *figurative plate brooches* (bird, s, diamond, quaterfoil, square), which are also added to the database. Objects that did not belonged to one of these categories are grouped as *other*, such as bag mounds and saddle mounts.

To check if there are indeed some correlations between the amount of inlays present upon an objects and the richness of a grave, the total amount of grave goods present, including the garnet adorned objects had to be noted. This was done by adding a grave good range to the database mentioning one find, two to five, six to ten and more than ten objects. Where literature mentions no exact amount, but for instance 'some', then this is counted as two. Beads and coins however are the exceptions; those are

always counted as one extra grave good, for instance even if the object is described as a string of beads.

Disc brooches and bow brooches worn in pairs are thought to be a part of the women's garment (Heeren & Feijst 2017, 207-211; Koch 1998; Siegmund 1998; Vielitz 2003, 103-105). So, because the scope of this thesis is gender, matching sets of objects within one context were noted within the database. A division was made between 'set of two' *yes* for objects of which the literature stated that they belonged together, or that they were identical, and *probable* when two objects of the same type are found, but it is not entirely certain if they are a match.

In order to identify some general trends, the grave dates are counted in steps of hundred years, starting with 300 and ending with 800. Of course, not all graves in the research area were dated in a range of 100 years so in order to do so, these ranges had to be added to the database. For not all the dates coincide nicely, the oldest mentioned date is used to assign a time frame.

This paragraph is only concerned with the practical restrictions of the dataset. For a discussion about the theoretical restrictions of the interpretations of the material culture studied in this thesis, see chapter 3.

4.1.2. The bigger picture

The collected data will be incorporated into a larger research frame to make geographical and chronological comparisons. This will be executed by comparing the findings against two case studies, one from the mainland, and one from the British Isles, i.e. the grave of Childeric and Sutton Hoo, and research conducted in England by Heinrich Härke (2011).

4.2. (Post)depositional factors of influence

Not every facet of life is visible within the archaeological record; some aspects are intangible and some materials deteriorate over time. Archaeological interpretations and reconstructions are therefore based upon objects that are able to withstand post depositional processes, both natural and caused by humans (Cronyn 1990, 17; Ekegren 2013, 183; Härke 2014, 44). The objects deposited are altered during the time they are interred within the soil, and bear visible traces of processes and activities that occurred during that time. The study of these post depositional processes is called taphonomy, derived from the Greek words of 'burial' and 'law', and can be used to establish which

traces are part of the object biography, and which are part of the taphonomic modification, pre- and post-burial[17] (Lyman 1994; White and Folkens 2005, 49). The preservation of an object depends not only upon the nature and physical properties of the material, but also upon the context in which it is deposited (Cronyn 1990, 14).

4.2.1. Conditions in archaeological environments for preservation

Everything is subject to decay, therefore the recovery of an unaltered archaeological artefact is improbable, especially because they are recovered from depositions in which they have resided for over a long time (Cronyn 1990, 17). Agents within the environment interact with the object and alter those material in two ways, physical: the breakdown of the structure (e.g. stone by frost) and chemical: alteration of the chemical composition (e.g. rust) (Cronyn 1990, 14; White and Folkens 2005, 49). If an object is retrieved without visible weathering or decay, this implies that either the means of decay were absent within the deposition or that the preserving conditions have prevailed, for the context has a bigger influence upon the preservation than the period of deposition (Cronyn 1990, 17; White and Folkens 2005, 51-52).

The agents of decay in archaeological environments are water, oxygen, and acidity and alkalinity. The redox[18] potential, salts, complexes, temperature, overburden (pressure) and organisms[19] have an impact upon the deterioration of an object as well (Cronyn 1990, 17-24). Paradoxically these factors of deterioration can also be the means of preservation (Cronyn 1990, 14). Why materials are preserved within a certain deposit is often very difficult to detect, but the more accustomed causes are the absence of oxygen and the absence of water, which is rare in north-west Europe. The latter can mean both a dry or a cold environment, where cold conditions generally provide better circumstances for preservation. There are certain exceptional conditions in which objects can be preserved in water. The presence of salts and other residues within the deposit, absence of movement and fluctuations, chemical traces, and impressions are other means of preservation (Cronyn 1990, 24-29). With impressions the object itself is no longer there, but an imprint is left. Another method of preservation that does not conserve the original material is that of pseudomorphic replacement; the material is replaced by another but the form remains the same (Cronyn 1990, 17, 28).

---

[17] There are two phases in the taphonomic history of objects/remains (**Lyman 1994, 406)**, this will be elaborated upon.
[18] Chemical term, short for reduction–oxidation reaction.
[19] For an exact explanation of how these agents work, see the article of Cronyn (1990)

The preservation of grave goods and skeletal material within their deposition is not only influenced by the chemical composition of the environment, but also depends on factors such as bioturbation, human interference and geomorphic processes (Lyman 1994,404-416; White and Folkens 2005, 54-57)

When discussing 'post depositional' processes, it is important to keep in mind that deposition not necessarily refers to the act of burial, an artefact can be deposited, but remain unburied for some time. Burying however is a significant aspect of the taphonomic history of an object or a person, and a 'post burial' process is always a post depositional one (Lyman 1994, 406). If artefacts endure their deposition within the geological record this is primarily because a balance between the material and the depositional environment was established. The physical properties of the materials important for this study will now be discussed shortly (Cronyn 1990, 14,29; Ekegren 2013, 183; Härke 2014, 44).

Garnets

Garnet is a crystalline variety of siliceous material chemically based on silica and different metal ions[20]. Siliceous materials in general are glasslike and brittle but their physical properties range from extremely porous and soft (based upon calcium) to exceedingly dense and very hard (based upon silica) (Arrhenius 1985, 21; Calligaro 2004, 105,110; Cronyn 1990, 102; Krippner *et al* 2004, 37). The silicate crystals are formed within the geological formation of the igneous rock during the gradually cooling process, and when found in pure form are referred to as precious gems (Behrendt and Mecking 2013,193; Cronyn 1990, 106-107; Galoisy 2013, 453; Krippner *et al* 2004, 36). Many of these gems remain (chemically) unaltered when they are retrieved from their host rocks. Due to their materialization process, it is not surprising that they have a strong resistance to alteration during taphonomic processes. The predominant type of weathering for a lot of gemstones is therefore fracturing or flaking (physical damage), due to their friability, but chemically they can almost endure any environment. This is also the case for garnets, which, with a hardness of 6.5 to 7 on Moh's hardness scale[21] are considered a durable gemstone. This makes them very interesting from an archaeological point of view (Calligaro 2004, 102; Cronyn 1990, 102-103; Galoisy 2013, 453).

---

[20] See also chapter 2.2.1. for the varieties of chemical garnet compositions.
[21] Goes up to 10 diamond

Metals

The deterioration of (precious) metals will be shortly discussed here for they are within the scope of the study[22]. Metals are predominantly receptive for chemical deterioration, derived from both the activity of biological organisms and inorganic sources within the environment. Gold is the only exception. This chemical alteration is known as corrosion (Cronyn 1990, 165,168). If corrosion takes place within a 'dry' environment, only a thin patination or tarnishing will be visible on the surface of the object. For archaeological material however, the 'aqueous' corrosion is more significant, especially for North Western Europe, and has a more vigorous affect (Cronyn 1990, 166). The 'aqueous' corrosion discerns in two different manners. With *active* corrosion, the metal excretes soluble products into the environment. Within a very acid or extreme alkaline environment this can proceed until all traces of the original object is lost, aside from a stain within the soil. Opposed to this, is the attachment of solid corrosion particles to the surface of the artefact, constraining corroding process. This is called *passivation* (Cronyn 1990, 168). Because archaeological artefacts seldomly consist of one piece of metal, but are fabricated using different types of metal or materials, solders and adhesives[23] are required. At the joints between two metals, the corroding process changes. The base metal starts to corrode quicker, whilst the corrosion of the more noble metal slows down or even stops. This is called 'galvanic corrosion'(Cronyn 1990, 162, 171).

When archaeologically dealing with corrosion, something that has to be considered, is the effect of the redox potential. If the depositional environment consists of low redox conditions, such as peat bogs, estuarine and compact urban deposits, the metal is not or barely modified by corrosion, and are preserved very well (Cronyn 1990, 169). Other environments however, such as terrestrial and marine muds, incorporate sulphate-reducing bacteria, which actually enhance corrosion. Copper however is toxic to those bacteria, so copper alloys (such as archaeological silver and gold) are not affected by this enhanced deterioration (Cronyn 1990, 169).

Skeletal remains

In many cultures, the body is interred shortly after death, so when a grave is excavated the skeleton can provide crucial information. Skeletal markers can give some insights in for instance preparatory practices or cause of death, and the disposition of the skeleton

---

[22] For the physical properties of metals, see chapter 5 of Cronyn 1990
[23] For more information about adhesives and soldering, see the article of Cronyn 1990

can contribute to a reconstruction of the cultural placement of the body[24]. Taphonomic processes can alter the skeleton, which is important to anticipate during excavation and interpretation (Ekegren 2013, 177; White and Folkens 2005, 50).

Skeletal elements each have their own physical and chemical features that effect the influence of taphonomic processes, such as shape, size and density. The absence of certain bones, such as the hand phalanges, are therefore not necessarily a result of the burial practice, but can be the consequence of animal tunnelling or deterioration (White and Folkens 2005, 51-52). Alteration of the bones that are to be expected after a certain amount of time, are mineralisation, fossilisation and structural and chemical breakdown. These alterations can vary from minor to severe, depending upon the depositional environment. Soil acidity (pH) significantly affects the organic components of the bone, collagen and minerals, and increases the rate of bone deterioration. Temperature, moisture and permeability also have this affect, Better preservation circumstances are found in well-drained areas with a low water table, but also here other post depositional processes, such as the secreted acid of plant roots, do alter the bone (Lyman 1994,404-416; White and Folkens 2005, 51-52,54-57).

The alteration of the skeletal remains by post depositional processes is connected to the environment of deposition, and even differences of soil condition within a burial can cause differential deterioration. This has to be considered when studying burial archaeology, for osteoarchaeological research relies on skeletal markers and sexually dimorphic elements to sex the interred (Lyman 1994,404-416; White and Folkens 2005, 51-52, 386).

4.2.2. Landscape and preservation

Both the action of humans and geomorphic[25] processes have an impact upon the preservation of archaeological material and thus the distribution patterns of the material studied. The stratigraphy of the sedimentary layers is based upon a variety of depositions, such as glacial (ice), fluvial(water) and aeolian (wind), forming different types of landscapes (Berendsen 2008, 124-129, 382; Lyman 1994,404-416). As shortly mentioned in the introduction (chapter 1.3), the research area consists of a variety of these landscapes, situated within the regions of the Netherlands, Belgium, Luxembourg

---

[24] Discussed in chapter 3. 1
[25] land forms and land form changes

and the German Bündesländer of Rheinland-Pfalz, Saarland and Nordrhein-Westfalen. The landscape keeps changing and people shape the environment in which they live, so the present-day situation does not represent the medieval landscape, but does influence the preservation of the artefacts (Berendsen 2005b,175).

As discussed in chapter 4.2.1., well-drained areas with a low water table provide generally good preservation circumstances for bone material and metals (Cronyn 1990, 166; Lyman 1994,404-416; White and Folkens 2005, 51-52,54-57). North-west Europe however is not precisely known for these conditions. This is no different for the research area and, especially within the Netherlands, the ground water table is high. Contradictory, especially because of this excessive presence of water, some artefacts are very well preserved. Due to the saturation of the soil (waterlogging), oxygen is prevented from reaching the materials (Cronyn 1990, 26).

The sea has always had a major influence on the coastal areas and the conservation circumstances. In the Holocene era the North Sea flooded the coastal areas various times, depositing marine clay on the land. Swamps and peat started to develop upon these depositions in the areas that remained underwater (Berendsen 2005a, 123-152). This peat area was situated behind beach barriers (strandwallen) along the western coast and stretched all the way till northwest Germany, until the early middle ages (Berendsen 2005a, 123). During the medieval period the coastal areas of the Netherlands and Belgium saw a decline of habitation as a result of flooding, but were still inhabited (Bazelmans *et al.* 2011, 62-65, 69; Berendsen 2005a, 110; Berendsen 2005b,185; Brather 2014, 567-568; Sarris 2011, 76-77). Peat and clay are, apart from the coastal dunes, the dominant type of soil present within these areas and both have good preservation qualities for organic material. However, due to land reclamation practices, which started in the late medieval period, the peat has substantially disappeared (Auzina *et al.* 2015, 40; Berendsen 2005b, 187-191).

Two other sorts of landscapes prominent within the research area are the result of fluvial processes. The main rivers, like the Meuse, Rhine and Scheldt have changed their courses over time and new river branches, such as the Lek and Waal were created (Bazelmans *et al.* 2011, 62-65; Berendsen 2005a, 110). The upstream area was subject to fluvial erosion, as a result of the changing courses of the rivers. The valley of the Meuse is one of the results of this erosion. (Berendsen 2008, 124-129, 382; Lyman 1994,404-416; Waters 1992, 120-122).

The last described kind of regions are the of the Aeolian cover sands and loess. These Aeolian cover sands areas can be found in for instance Brabant, the eastern

Netherlands and Westphalen and are inhabited throughout the early medieval period (Berendsen 2005a, 61-70; Berendsen 2005b,185 Bloemers *et al.* 1988, 5-40.) These cover sands were blown in after the last ice age and are fine grained and non-calcareous, providing bad preservation conditions, especially for metals (Berendsen 2005a, 61-70; Bloemers *et al.* 1988, 5-40; Cronyn 1990, 168). The preservation conditions of the loess areas of southern Limburg, eastern Belgium, Luxembourg and Rheinland-Pfalz are similar, but slightly better than those of the Aeolian cover sands (Auzina *et al.* 2015, 41; Berendsen 2005a, 11-27; Water 1992, 202-203).

This chapter introduced the dataset of this thesis. The actual dataset will be presented in chapter 5. This chapter, besides introducing the dataset, also put forth several risks and practical limitations of the dataset. The age of certain data, biases in conservation, both mechanical, chemical and cultural/political are discussed. These factors, combined with the factors mentioned in chapter 3 will provide important touchstones for the interpretation of the dataset, as is set forth in chapter six. In the next chapter, the dataset itself is presented, as well as the case study of Childeric and Sutton Hoo. Also in the next chapter, several queries are presented which should make the data more accessible for interpretation and the interpretation itself more understandable.

Chapter 5: Garnet inlaid objects in the Rhine and North Sea area

In the previous chapters, the subject of this thesis was introduced and the implications and limitations of the study of garnets was discussed. This chapter will present an overview of the information available from the dataset. This dataset is not comprehensive. More instances of garnet decorated objects can be found if the search continues. However, the current sample provides good insights in the overall composition of the garnet decorated objects. After a short introduction of the database, the object types, styles, quantities and materials will be discussed[26]. Data showing possible connections between the amount of grave goods and the occurrence of garnet inlaid objects in a grave are presented, as will be the possible relation to the number of inlays present upon an object. This in order to give insights into the social importance of these objects in relation to gender. Some sites or find contexts will be presented in greater detail, as will the comparative case studies of Childeric and Sutton Hoo. A brief description of the geographical results from the research in 2015 (Auzina *et al.*) will be included, to provide some contextual information.

5.1. Database

Within the research area, a total of 105 sites were found to hold objects meeting the criteria to be counted as containing garnet caches[27]. These garnet inlaid objects are dispersed over about 395 contexts. A significant amount was deposited in burial contexts, whether or not the archaeological site contained a cemetery as known from the Merovingian period (see tab.1.). Mainly the objects recovered from Frisia are found either in depositions that indicated a settlement context or in hoards, but also in Limburg and Zuid-Holland a settlement context is noted.

Table 1. Sites found within the research area

Site type	Count objects
Burial mounds	2
Cemetery	483
Church	26
Hoard	3
Roman tempel	1
Settlement	2
Stray find	12
Unknown	20
total	**549**

---

[26] As mentioned in chapter 4, the database was assembled during the 2015 research project 'Byzantium in the North' of which I was a member. Consequently, some of the conducted analysis within the scope of this thesis will resemble the 2015 output, but is not an immediate reproduction.
[27] See chapter 4.1.1.

5.1.1. Object types, styles and materials used

These artefacts, 549 in total, are best characterised as embellishments. As can be seen in the tab.2., the category of brooches is the most frequent with 422 examples, which is a little more than 77%. The other objects found are bundled within the subcategories of jewellery (66), adornments (44), weapons (eight), and other (six). For three objects, the type is undetermined. For more than 80% of the objects, the probability of containing garnets was high enough to classify as such (see tab. 3.).

Table 2. Objects per category
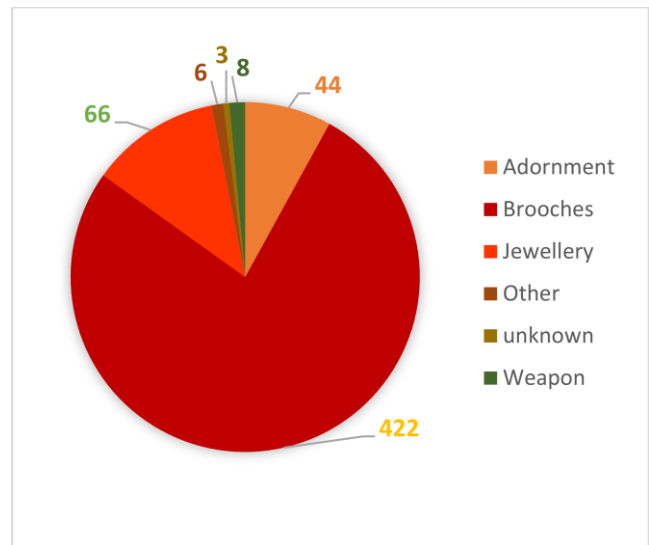
The brooches, or *fibulae,* are present throughout the research area and are found in a variety of forms, with the disc brooch being the predominant type. Disc brooches represent more than 61% of the total amount of brooches (see tab.3.) and encompasses round-, rosette- and umbo shaped brooches. The figurative plate brooches are counted 94 times (22%). Albeit their known wide array of shapes, the bird brooches and S-brooches account for the biggest percentage of this sort, with an occurrence of 50 and 28 times. The other forms present are cross, diamond, quaterfoil, square and star.

Table 4. Inlay material

	Amount of objects
garnet	459
garnet or glass	54
unknown	36
total	**549**

The bow brooches account for 15% of all the brooches, with 61 bow- and only two disc-on-bow brooches.

Objects that can be defined as jewellery, such as earrings, pendants, hairpins and

Table 3. Types of brooches

Table 6. Types of jewellery

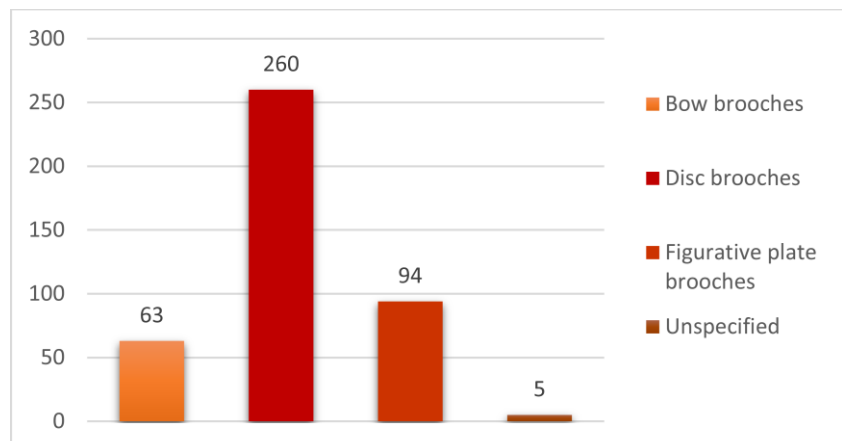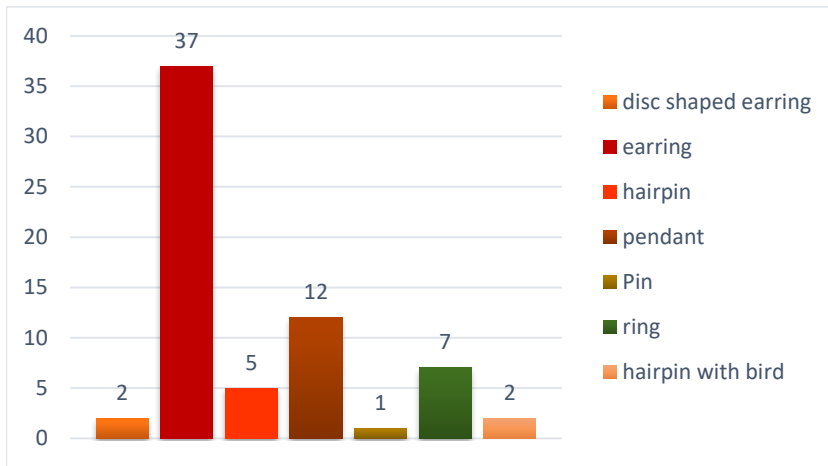Table 6. Types of jewellery

Table 5. Amount of objects per type

Object type	Amount
Adornment	**44**
belt buckle	21
belt mount	18
belt tong	1
buckle	2
panel	1
stud	1
Brooches	**422**
bird brooch	50
bow brooch	61
brooch	5
cross brooch	1
diamond brooch	2
disc brooch	216
disc-on-bow brooch	2
Domed disc brooch	1
quaterfoil brooch	4
headplate	1
rosette brooch	41
S brooch	28
square brooch	6
star brooch	3
umbo shaped-brooch	1
Jewellery	**66**
disc shaped earring	2
earring	37
hairpin	5
hairpin with bird	2
pendant	12
Pin	1
ring	7
Other	**6**
bag mount	1
bead	1
hanging bowl	1
loose inlays	1
saddle mount	2
unknown	**3**
unknown	3
Weapon	**8**
Agrave	1
mount	2
pyramidal mount	1
spatha	1
sword button	3
total	**549**

rings represent a small percentage of eleven percent of the found objects and is the second largest category (see tab.2.). As can be seen in tab.5. of the jewellery, the earring is by far the most predominant object, with an amount of 39 out of 66. Clothing adornments, such as belt buckles, are not directly categorized with the label jewellery, and are therefore noted as adornments in this research. In total only a little more than eight percent are combined under this description, and mainly consists of belt fittings (buckle, tong, mount). Almost one and a halve percent of the found objects were related to weapons, such as sword buttons, and only six objects were found that did not meet one of the above mentioned categories. These objects consist of a bag mount, a bead, a silver hanging bowl, two saddle mounts and some garnet slabs (see tab. 6.

Material

Garnet adorned objects are mainly known for their characteristic combination of red and gold. However, examples in (gilded) silver and gold plated lesser metals such as iron and bronze are also known. For the research area, all objects that were noted as gold, gold plated or (gilded) silver were counted as such. When nothing about the metal was stated, but the picture

showed a golden object, these were counted as gold. For 73% of the objects the material remained undetermined[28]. When these are taken out of the equation, 148 objects remain. Unexpectedly almost 59% of the objects are created in silver (see tab.7.). Almost 36% of the objects are created in gold, and only of 8 could be established that they were created in bronze or copper. Notable are three single finds from Stein, de Groote Bongerd in the Netherlands. Two copper belt mounts and one belt buckle (material n/a) were found to contain a wooden backplate. These are the only ones known from the dataset. For the two bronze objects, albeit their simpler material, it is noted that they contained real garnets. As can be seen in tab.8., most objects of which the material is known are adorned with a garnet inlay, and only two are noted to contain (possible) glass. However, because 73% of the objects are not taken into account, any interpretation should be met with hesitance, when using this information in general queries.

Table 7. Material of the object

Material object	Amount of objects
Gold	**53**
gold	52
gold and silver	1
Lesser metal	**8**
bronze	4
copper alloy	1
gold plated	3
Silver	**87**
gilded silver	5
silver	82
Unditermined	**401**
n/a	401
total	**549**

Table 8. Material total object

Material	Amount of objects
garnet	**143**
Gold	50
Lesser metal	8
Silver	85
garnet or glass	**2**
Gold	1
Silver	1
unknown	**3**
Gold	2
Silver	1
total	**148**

---

[28] When taking the visual properties of an object into account, gilded silver and gold plated are almost undistinguishable from gold and could be reckoned as such. For this query however, the original materials are counted, to test for the presumed quality of the object. See also chapter 4.1.2

5.1.2. Commonly found or prestigious objects

There have been suggestions that the amount of garnets used can be proxies for the value of that object[29]. Therefore, the amount of garnets used and the type of setting will be presented here. The relationship of the material used to create the object and the material of the inlays in account to the perceived value of an object will not be presented here, but the material of the object will be taken into consideration when discussing other factors of influence. Due to the fact that most of the objects are found within a burial context, the contextual information derived from the grave good assemblage which could indicate the value of an object will be presented here as well, e.g. how many grave goods are present within the burial.

Mounting technique

As previously discussed[30], the most dominant mounting technique of early medieval garnet jewellery is cloisonné, covering a large part of the surface of the object with garnet caches (Arhennius 1985, 79; Calligaro et al 2002, 321; Farges 1998, 323; Mathis et al 2008, 2348; Sorg 2011, 150). For the objects recovered in the research area however, the amount of objects created with this technique is only slightly larger than those containing single settings (see tab.9.). Of the total amount of 549 garnet inlaid objects, 278 were counted consisting of cloisonné, which is 52 percent, opposed to 43 percent of objects holding single settings, which were counted 239 times. For this research, no differentiation between the varieties of single settings[31] had been made, for this acquires technical analysis.

Number of inlays

Table 9. Mounting technique

Mounting technique	Amount of objects
cloisonné	**278**
Adornment	24
Brooches	232
Jewellery	9
Other	3
unknown	2
Weapon	8
single setting	**239**
Adornment	18
Brooches	169
Jewellery	49
Other	2
unknown	3
single/cloisonné	**1**
Adornment	1
unknown	**31**
Adornment	1
Brooches	21
Jewellery	8
Other	1
Total of objects	**549**

---

[29] Discussed in chapter 4
30 Discussed in chapter 2.2.3.

31 Discussed in chapter 2.2.3.

In total 5385 garnet inlays are counted[32], dispersed about 549 objects. Were these equally divided, this would result in about ten inlays per object. One objects stands alone in the amount of garnet slabs it contains: a disc-on-bow brooch found in Wijnaldum upon a terp. This single find is found in a possible settlement context and contains as much as 350 garnet inlays; about six and a halve percentage of the total amount of inlays counted. Eight other objects, spread over seven sites, contained between 60 and 100 garnets each. This means nine objects, less than two percent of the objects found, contain almost 20% of all the garnets located in the research area (see tab.10.). Noteworthy is that the type of these objects are objects which are not predominantly discovered within the research area. Only two disc-on bow brooches are found, and only one bag mount is present within the dataset. The two saddle mounds at the site of Krefeld-Gellep, which both contained 91 garnet inlays, are also an exclusive type.

Table 10. Finds with large quantity inlays

Country	Site Name	Site type	Context type	Type of object	Inleys present	Number of inlays	Fitting techniques
Germany	Wardt-Lüttingen	stray find	stray find B	disc brooch	yes	61	cloisonné
	Krefeld / Gellep	cemetery	grave 1782	saddle mount	yes	91	cloisonné
				saddle mount	yes	91	cloisonné
				belt mount	yes	62	cloisonné
	Nettersheim	cemetery	grave 3	belt mount	partial	64	cloisonné
	Speyer / Germansberg	cemetery	grave 1	bag mount	partial	94	cloisonné
Belgium	Arlon	Church	grave X	belt mount	yes	79	cloisonné
	Marilles	unknown	stray find	disc brooch	yes	96	cloisonné
Netherlands	wijnaldum / Tjitsma	stray find	single find C	disc-on-bow brooch	yes	350	cloisonné

32 Number of inlays: minimum number of possible inlays, not all inlays were present, but empty chases were counted as well.

In total, 79 objects contained only one garnet inlay. As can be seen in <mark>graph xx</mark> there are more objects containing a small amount of garnets, and objects with a larger amount of garnets are found in lesser quantities. Almost 70% of the objects found contain between 1 and ten garnet slabs, of which the objects with 1 inlay (15,61%) and 5 inlays (12,6%) are the most present within the research area, representing almost 30% of all objects containing garnets. Consequently, only a little more than 30% of the objects contain more than ten garnets, of which almost 25% contains between ten and 30 inlays. Only 5,5% of all objects contain more than 30 garnets. The Wijnaldum brooch with 350 garnets is excluded from this graph, for it rendered the whole graph unreadable.

Table 11. Number of inlays and object count
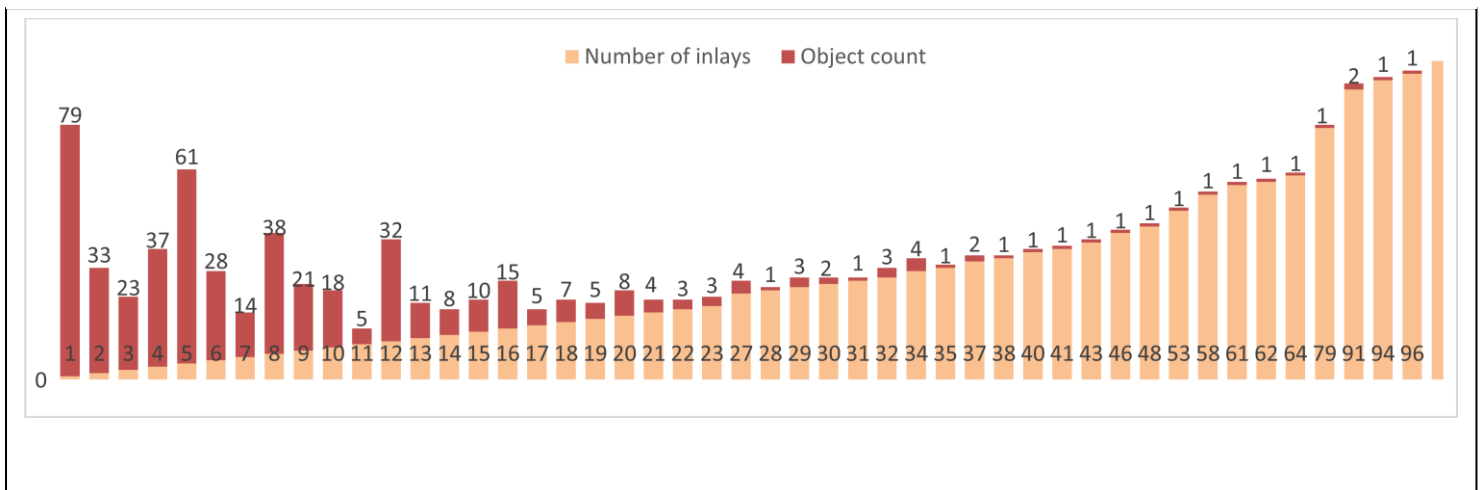
The object category of the brooches is the biggest group and consequently contains many of the garnets found within the research area. When looking at the ratio between the garnets found upon a certain type of object and the amount of objects found within this category however, only a small percentage (ten) is represented by brooches . The category of 'other' objects represents the most garnets found with 55%, followed by the category of 'weapons' (18%) and 'adornments' (twelve percent). The only category representing fewer garnets than the brooches is those of 'jewellery' with five percent (see tab 12.). In tab. 13. the amount of garnets found upon a certain

Table 12. Garnet ratio
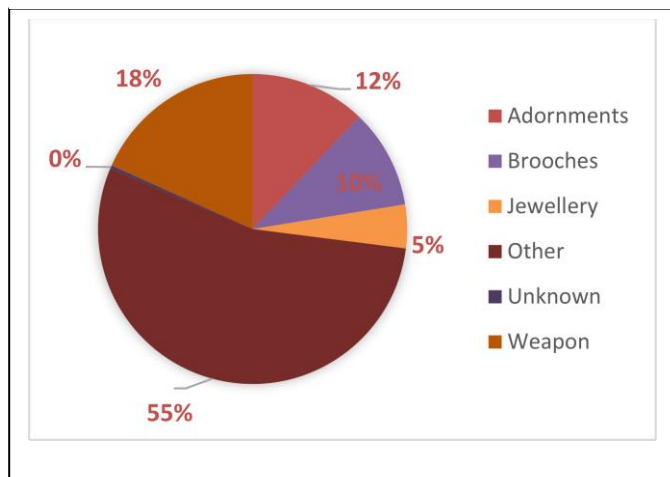
type of object are displayed, grouped per object category, combined with the material of the object. When the objects of which the metalloid material was undetermined are not taken into account, 40,75% of the inlays are found in objects made of gold, 34,7% are found in silver objects and 24,55% are found in objects classified as lesser materials. If the visual properties of the object are however taken into account, gilded silver and gold plated are almost undistinguishable from gold. As a result, 65,25% of all garnet inlays are found upon gold coloured objects.

Within the dataset, 19 objects are noted to contain different colours of inlays, as well as filigree. From these objects, eleven are disc brooches mounted with both the cloisonné (six) and the single setting (five) technique. The colours of the inlays noted are green, blue and white and contain both mentions of stone and glass. Six of the disc brooches were also decorated with filigree. The five rosette brooches contained all but one, a different type of inlay in the centre of the brooch; two a small green inlay and two filigree. The last one contained silver filigree in two of the garnet caskets. All the rosette brooches contained the cloisonné settings and were produced in both silver and gilded silver. Two golden pendants from one grave were found to contain one single black, next to the garnet single setting, and was decorated with filigree. The last object is a hairpin with a bird motif which contained two green inlays mentioned as glass.

Table 13. Material category with amount of inlays

Type and material	Amount of objects	Min no of inlays	Max no of inlays	No of inlays
Adornment	**44**	**7**	**167**	**507**
bronze	2	1	14	15
gold	11	1	62	114
n/a	26	1	79	338
silver	5	4	12	40
Brooches	**422**	**27**	**576**	**4142**
bronze	2	4	21	25
copper alloy	1	6	6	6
gilded silver	5	2	16	45
gold	25	1	48	315
gold and silver	1	4	4	4
gold plated	2	8	350	358
n/a	316	1	96	2895
silver	70	1	35	494
Jewellery	**66**	**6**	**55**	**286**
gold	8	1	11	35
n/a	52	1	32	215
silver	6	4	12	36
Other	**6**	**34**	**189**	**310**
gold	3	29	91	211
n/a	2	1	94	95
silver	1	4	4	4
unknown	**3**	**1**	**1**	**1**
gold	1	1	1	1
n/a	2			
Weapon	**8**	**40**	**108**	**139**
gold	4	3	28	47
gold plated	1	34	34	34
n/a	3	3	46	58
total	**549**	**115**	**1096**	**5385**

Find assemblage

Considering the combination of objects found within a certain context could add to the interpretation of the perceived value of an object the amounts of objects were taken into account[33]. The amount of objects has been counted in clusters, including the garnet adorned objects. As can be seen in tab. 14, 266 garnet adorned objects were found unaccompanied by other objects, representing the biggest quantity. The number of contexts declines when the amount of objects counted increase; 95 contexts hold two to five objects, 31 contain six to ten and only eight include more than ten objects[34]. All those eight contexts are burials, but three of them are recovered from the site of a church, and the other five are cemeteries, typical from the Merovingian age (tab. 15.).

The graves with two to five objects contain a variety of objects, such as different (clothing) adornments and jewellery without garnets, jewellery of beads, bowls and beakers both from glass and from ceramics and some tools such as a key, a knife, a spindle whorl, an axe, a comb and a needle. Also some coins are present. These objects are also found within the graves with six to ten objects, but within larger

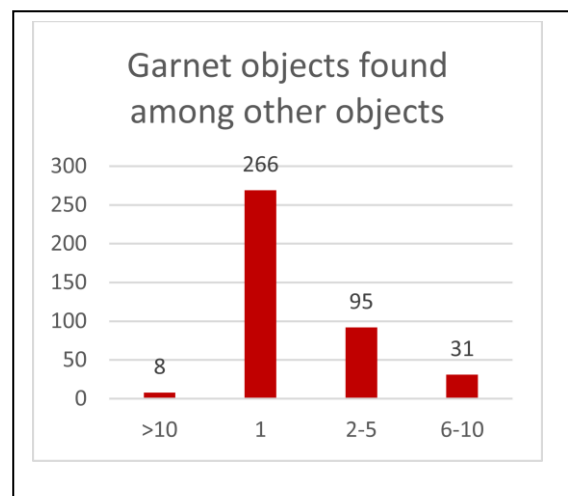*Table 15. Amount of grave goods, context count*

Garnet objects found among other objects

Grave goods	burial mounds	cemetery	Church	hoard	Roman tempel	settlement	stray find	unknown	total
>10		5	3						8
1		232	3	2	1	2	12	14	266
2-5	1	91	3						95
6-10		28	2					1	31
total	1	356	11	2	1	2	12	15	400
Amount of grave goods within a grave, site count.									

Table 14. Amount of grave goods within a grave, site count.

---

[33] Only the contexts containing garnet objects were taken into account.
[34] A detailed overview of the site and contexts clustered per amount of objects can be found in the appendix.

quantities. Also bigger weapons are found, such as the spatha and sax, and some less common objects start to appear, such as a wooden box with bronze decorations and a bead string necklace with golden filigree pendants. Four objects with more than 30 inlays are found within these graves (tab. 16.).

In total 37 of the garnet objects are found within the eight burials with the most objects. Of these objects twelve are brooches and 16 are clothing adornments such as belt buckles and belt mounts. Ten of those belt mounts are found within the same grave at Krefeld-Gellep and are probably part of the same belt. Interesting to note is that half of all the garnet containing objects found that classify as weapons are found within these graves. As do the vastly decorated saddle mounts from Krefeld-Gellep. A lot of the objects without garnets that are found within these graves are mentioned when describing the graves with less funerary gifts. The graves with more than ten objects however contain a greater amount of weapons, and stand out mainly through the lavish amount of objects. Some of the copious graves will be discussed in greater detail later on. Four objects with more than 30 inlays are found within these graves (see tab 17).

Table 17. Amount of grave goods and number of inlays

Site Name	Context type	amount grave goods	Type of object	Number of inlays	Object ID
Krefeld / Gellep	grave 1803	6-10	disc brooch	31	222
Nettersheim	grave 3	6-10	belt mount	64	322
Rosmeer	grave 90	6-10	disc brooch	48	406
Arlon	grave X	6-10	belt mount	79	453

Table 16. more than ten grave goods and rich objects

Site Name	Context type	amount grave goods	Type of object	Number of inlays
Krefeld / Gellep	grave 1782	>10	belt mount	62
			saddle mount	91
			saddle mount	91
Flonheim	grave 5	>10	spatha	46

Which objects are found in pairs.

When gathering the information for the database it became evident that for some objects it was stated that they belonged together as a pair. Because this information can provide some information about the garnment of the deceased[35], all objects that were stated to be identical to another object found within the same context, were noted as 'probable pair'. In total 36 objects with certainty were part of a set, representing 18 pairs. These objects, as can be seen in tab. 18. primarily consist of brooches and jewellery, with the exception of the Krefeld- Gellep saddle mounts. 104 objects were counted of which their association to another object was probable, resulting in another 52 pairs of objects. This indicates that nearly 19% of the objects found are discovered in pairs.

Table 18. Objects found in pairs

Objects found in pairs	Amount objects
Probable	**104**
Brooches	**104**
bird brooch	14
bow brooch	34
brooch	2
disc brooch	42
rosette brooch	6
square brooch	4
star brooch	2
Certain	**36**
Brooches	**20**
bird brooch	6
bow brooch	2
diamond brooch	2
disc brooch	6
four-path brooch	2
rosette brooch	2
Jewellery	**14**
disc shaped earring	2
earring	10
pendant	2
Other	**2**
saddle mount	2
total	**140**

---

[35] See chapter 4.1.2

5.1.3. What are the differences in the occurrence of garnet adorned objects in male and female graves?

Within the research area, a total of 395 find contexts are documented, of which from 127 the gender of the interred is determined. Of 268 contexts there was no mention of a gender association, so this was either not possible or the reference had not been made by the excavators. This means that a total 31,90% of the contexts in the dataset have an appointed gender. 247 garnet adorned objects were recovered within these contexts, against 302 within those without gender suggestion. In consequence, around 44% of the garnet adorned objects have a gender reference.

Of the gendered contexts, nine are considered male, 116 female and two of them contained both a female and a male. The major amount of the gender referenced objects are obtained from the female contexts; 86% including the four objects that were ascribed to both. The remaining 38 objects were found to be male. As shown within tab 19. the type of objects that are found differ between the genders. The objects grouped as jewellery are found within the female graves, whereas the adornments such as belt buckles are mainly found within the male graves. A gender division of the brooches is not clearly distinguished within this dataset, but the garnet objects classified as being part of weapons are mainly found within the male graves. When using this data for interpretations one should keep in mind that the Merovingian graves were are often gendered based upon their grave good assemblages as the biological sex of the

Table 19. Object differences in gender

| Object types	amount
Female	**208**
Adornment	**1**
belt buckle	1
Brooches	**175**
bird brooch	21
bow brooch	34
diamond brooch	2
disc brooch	89
quaterfoil brooch	4
rosette brooch	16
S brooch	5
square brooch	4
Jewellery	**28**
earring	13
hairpin	2
hairpin with bird	1
pendant	7
ring	5
Other	**2**
bead	1
loose inlays	1
unknown	**1**
unknown	1
Weapon	**2**
mount	2
Male	**34**
Adornment	**22**
belt buckle	8
belt mount	14
Brooches	**6**
disc brooch	4
rosette brooch	2
Other	**2**
saddle mount	2
Weapon	**4**
spatha	1
sword button	3
Male and Female	**4**
Brooches	**4**
bow brooch	2
disc brooch	2
total	**246**

skeleton was generally not determined due to bad preservation of the bones. This restraint is not necessary when looking at the differences in the amount of inlays present, for this was not attributed as a gender marker.

When looking at the amount of inlays present upon the gendered objects it is clear that the objects containing a large amount of garnets are found within the male graves. Five out of the nine richly decorated objects (more than 60 inlays) are male, for the remaining four the gender was not determined. Of the total amount of garnet slabs with an assigned gender, a quarter of all the garnets slabs are male and 74% are female (tab 20.). The highest amount of garnet inlays counted upon a female object is 58 and five other objects contained more than 30 inlays. The biggest amount of female objects, 51%, contained two to nine inlays (tab 21). The ratio of the mounting technique is for both the male and female objects almost equal, with for the male objects with a slightly bigger percentage of cloisonné.

Table 21. Gender and amount of inlays

Gender	amount inlays
Female	1844
Male	617
Male & Female	24
Eindtotaal	**2485**

Table 20. Amount of inlays per gender
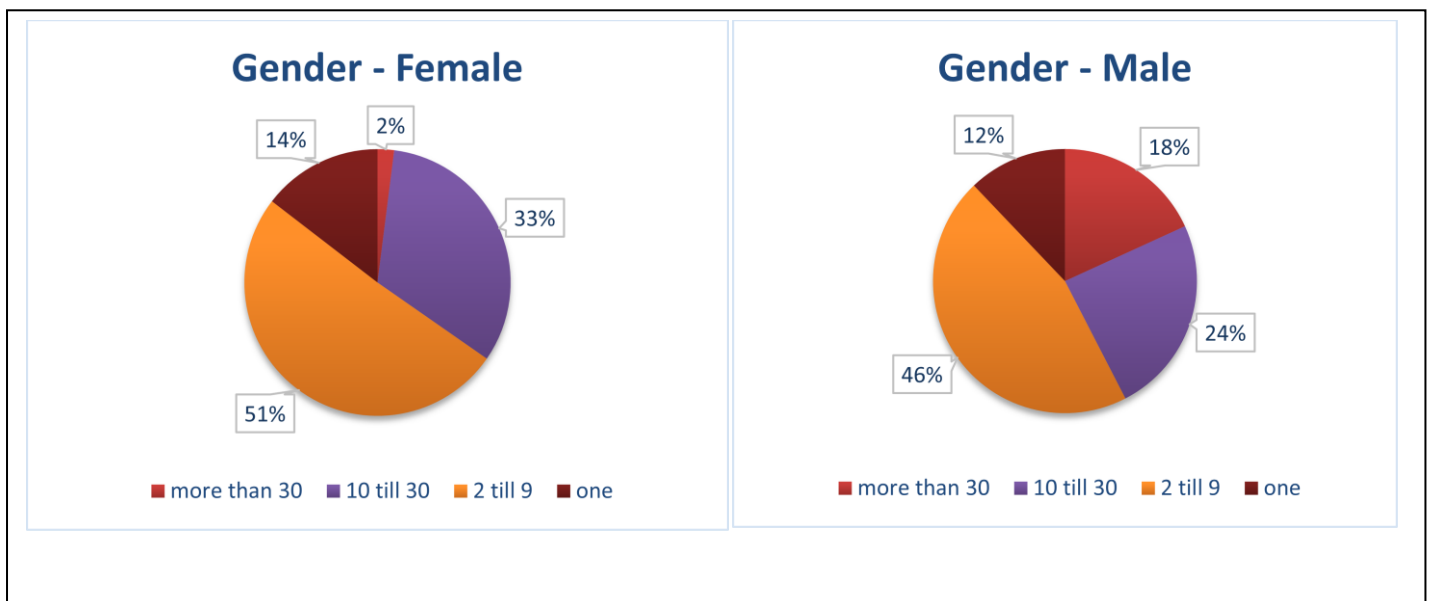
The difference between male and female graves is also visible when looking at the amount of objects that are deposited within the grave. Only one of the graves gendered female contained more than ten grave goods, opposed to four contexts gendered male. One of the contexts containing both a man and a woman also counted more than ten grave goods, the other two to five. With the female graves, 60% falls in

the range of two to five grave goods, 22,6% contains six to ten and a little more than 16,5% contain no other objects besides the garnet inlaid object. Tree of the male graves contained two to five and two contained six to ten grave goods.

5.1.4. Which significant difference in the geographical and chronological distribution of garnet adorned objects can be seen ?

Distribution maps are very useful in deriving geographical information. The research of 2015 based a lot of interpretations upon the maps created from the data present within the database. In order to create some contextual information, a short description of these observations will be presented here. The map visualising the distribution of garnet inlaid objects (fig 14) shows four conglomerations of sites, but also that almost all sites are located near well accessible places. One of the site clusters is situated in the vicinity of the river Rhine, specifically upstream from Rhenen in the centre of the research area. To the West of Rhenen, the only sites along the Rhine found to contain garnets are Rijnsburg and Oegstgeest. The second cluster is situated along the old roman road system that connected Amiens, Bavay, Tongeren, and Cologne. The third is situated in the Northern Netherlands along the coast, and the last one in Trier. Distinct from this distribution map, is that sites which contain several garnet inlaid objects are located upon sites known to have a Roman predecessor such as Cologne, Düsseldorf, Maastricht and Nijmegen, with the site of Rhenen being the exception.

The types of objects found within the research area seem to show slight differences in the geographical dispersion. However, a comparison has been made based upon the different modern regions, which does not necessarily reflect the regions as known within the Merovingian period. As can be seen in tab 22.

Table 22. Amount of objects per region

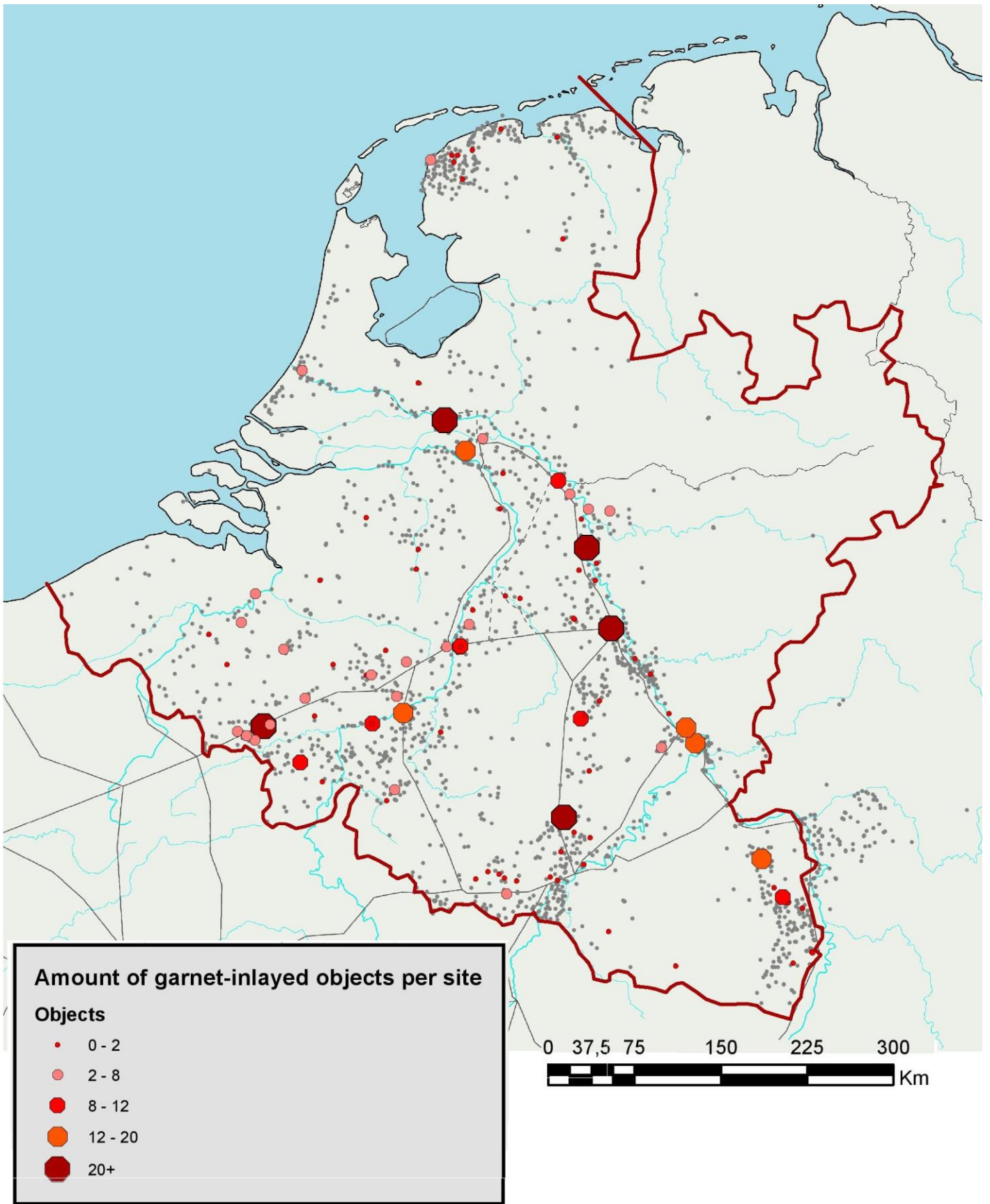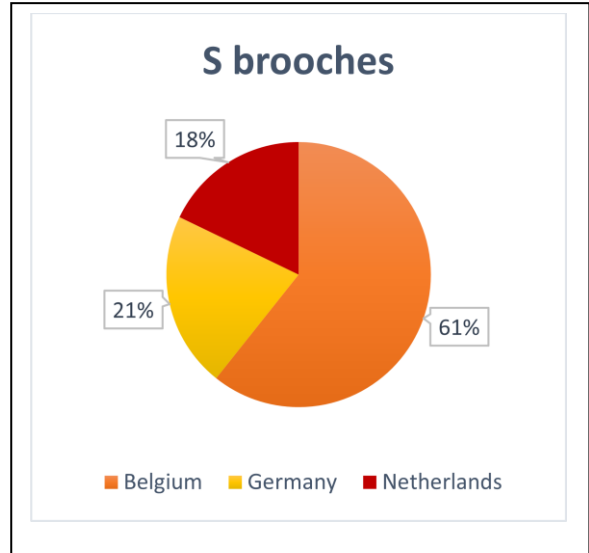| Country	Amount objects
Belgium	174
Germany	222
Luxembourg	15
Netherlands	138
total	**549**

Figure 14. Distribution of garnet inlaid objects with amount of garnet-inlayd objects per site (Auzina et al. 2015)

the amount of objects found within the different regions are not very dissimilar, except for Luxembourg, making it possible to look into typological differences.

Of the figurative plate brooches, the bird brooch is fairly evenly distributed, contrasting the S brooches are mainly found within the region of Belgium and Luxembourg does not contain any figurative plate brooches (tab 23). The bow brooches and disc brooches are predominantly found within the German region of the research area, except for the rosette brooches, of which almost none are recovered in this particular area but are present within the Netherlands and Belgium (tab 24). Objects classifying as adornments, such as belt mounts, are mainly found within Germany as opposed to jewellery which is primarily found in Belgium. From this last category, the pendants are only found in the Netherlands and Luxembourg, whilst 64% of the earrings are found in Belgium.

Table 24. S brooches per region

Table 23. Types of disc brooches per region
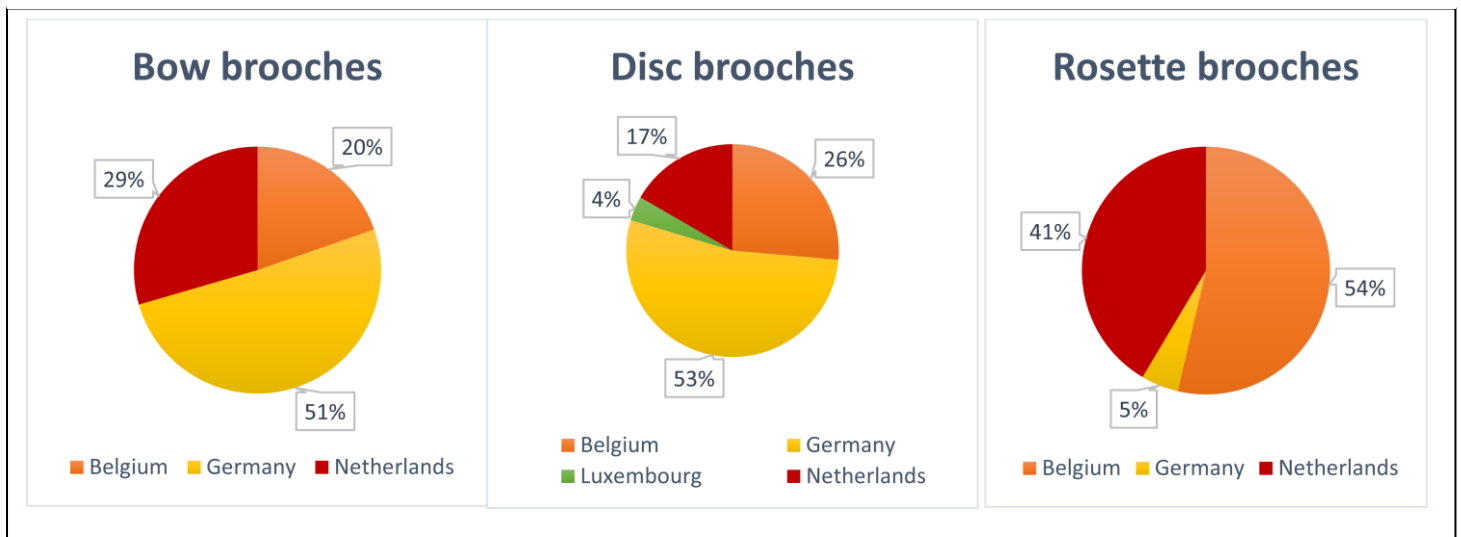
 In order to suggest something about the chronology of garnet adorned objects only the contexts that are dated could be taken into account. Of the 395 contexts containing garnet objects, 72 mentioned a date other than 'belonging to the Early Medieval Period'.

72

As a consequence a little more than 80% of the contexts will not be taken into account for the next queries. In order to identify some general trends, the grave dates in these queries are counted in steps of hundred years, starting with 300 AD and ending with 800 AD. In order to do so, the oldest mentioned date is used to assign a time frame.

Table 25. Time frame and type of object

Fist observation from tab 25 shows that most of the contexts are dated between 500 and 600 AD. Consequently, most of the object types are found within this timeframe. Some contexts however are already dated in the fourth and fifth century. The garnet adorned objects found within these are the type of disc brooches (tab.25.). They are also present within the contexts dated to the seventh century. The setting technique from the disc brooches in the fourth century is cloisonné. During the fifth century the single settings are also found and they remain coexisting into the seventh century.

The amount of grave goods present within these contexts shows that all the contexts with more than ten objects within the grave assemblage are assigned to the sixth century. The early context from the fourth century has a grave assemblage from two to five objects, and during the fifth century the graves with only the garnet adorned object as grave good start to appear. The grave good assemblages with six to ten objects are observed from the fifth century onwards, and stretch into the seventh century.

The biggest amount of garnet inlays present is during the sixth century (tab.26.) But when

Time and type	Amount
300-400	**2**
disc brooch	2
400-500	**10**
disc brooch	8
hairpin with bird	2
500-600	**118**
belt mount	1
bird brooch	13
bow brooch	5
buckle	4
disc brooch	64
disc shaped earring	2
earring	3
hairpin	4
pendant	1
ring	1
rosette brooch	7
S brooch	5
saddle mount	1
star brooch	2
sword button	2
unknown	3
600-700	**5**
belt mount	1
bird brooch	1
disc brooch	2
S brooch	1
total	**135**

Table 26. Amount of objects and number of inlays per time frame

Date	Amount objects	Number of inlays
300-400	2	15
400-500	10	23
500-600	118	1034
600-700	5	164
total	135	1236

looking at the ratio of inlays and objects in the seventh century, there are more garnets used for a lesser amount of objects. Three objects from the seventh century contain more than 30 garnet slabs, and no object has less than 15 garnets. Both the garnet objects of the fourth century contain 15 garnets, whilst in the fifth century the amount of garnets present is varying between one and six. Four out of the nine richly decorated objects (more than 60 inlays) present in the dataset are found in the sixth century contexts. Almost 39% of the objects from the sixth century contain ten till 30 garnets, 39,66% contains two to nine and a little more than 18% contains only one garnet.

From some sites the dates were available as well, making it possible to show when the garnet adorned objects were deposited within graves, in relation to the period of time the site was in use. These sites are shortly presented here.

Table 27. Pandhof cemetery
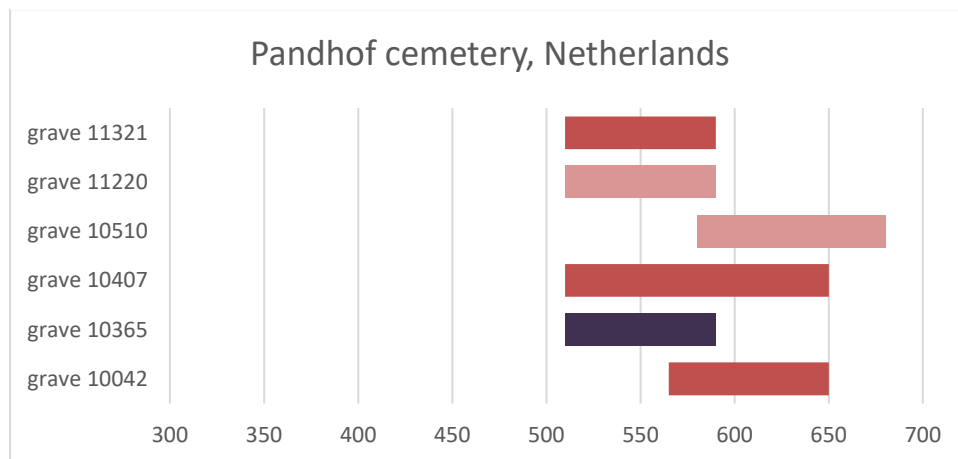
The Pandhof cemetery[36] (tab 27) was in use from late Roman times until the late seventh century. Three of the six dated graves found to include garnet inlaid objects hold a gender reference. One of these is male (purple) and two are female (pink). The male grave contained two to five grave goods, of which two garnet adorned objects. The female graves both contained two to five grave goods, of which two garnet adorned objects. The objects from female grave 10510 are the only two cloisonné bird brooches found within the research area. One of the graves with more than ten objects in the assemblage is found upon this site (grave 11321), unfortunately no gender reference was made.

---

[36] See also Documentatie Rijksdienst Cultureel Erfgoed te Amersfoort: Opgraving Pandhof Sint-Servaaskerk 1953-1954 (ROB); Glazema and Ypey, 1956; Kars 2011; Stoepker 1988.

The Wijchen Centrum cemetery[37] (tab 28) was in use from the second half of the fifth century until the first half of the seventh century. Eight of the nine dated graves found to include garnet inlaid objects hold a gender reference. One of these is male (purple) and seven are female (pink). The male grave contained two to five grave goods, of which one garnet adorned object containing 27 inlays. Three of the female graves contained two to five grave goods, and include five garnet adorned objects in total. Four of the female graves contained six to ten grave goods and include six garnet adorned objects in total.

---

[37] See Heeren & Hazenberg 2010.

Table 29. Krefeld-Gellep cemetery
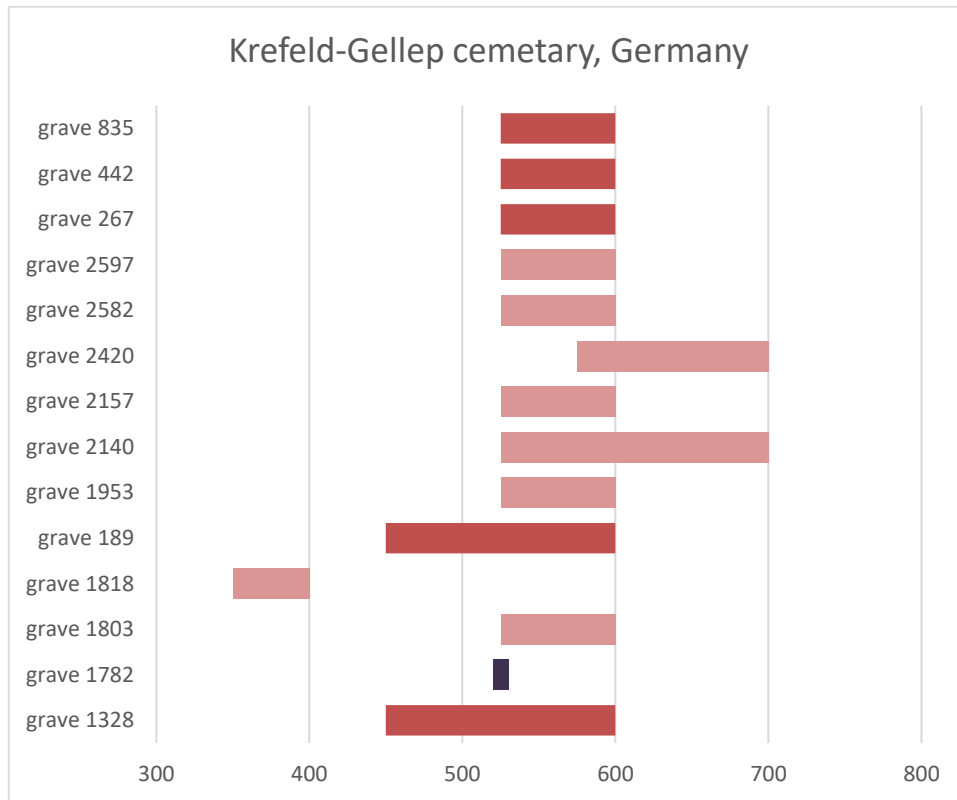
The Krefeld-Gellep cemetery[38] (tab 29) was in use from the beginning of the fourth until the eighth century. Nine of the 14 dated graves found to include garnet inlaid objects hold a gender reference. One of these is male (purple) and eight are female (pink). The male grave is the richest grave from the dataset. It contains more than ten grave goods, of which sixteen garnet adorned objects. Three of these objects contain more than 60 garnets. These are the saddle mounts, both containing 91 garnets, and a belt mount with 62 garnets. Four of the female graves contain two to five grave goods, of which five garnet adorned objects in total. The other four of the female graves contain six to ten grave goods, of which five garnet adorned objects in total. The disc brooch from grave 1830 contains 31 garnet inlays.

---

[38] See the various works of Pirling (1966,1974,1979) and Pirling, Siepen & Reichmann 2006.

Table 30. Flonheim church

Flonheim church, Germany

grave 5					
grave 1 or 2					
grave 1 or 2					

400   450   500   550   600
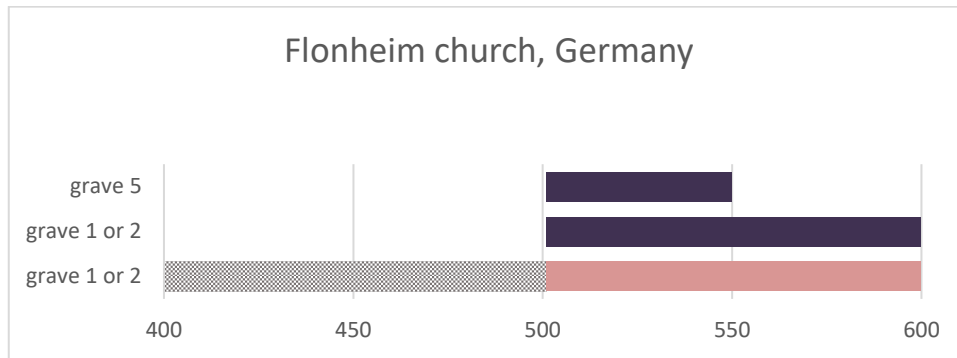
The Flonheim church[39] (tab 30) was in use during the fifth century. The two dated graves found to include garnet inlaid objects all are dated to the (early) sixth century and hold a gender reference. One of these is male (purple) and one contained both a male (purple) and a female (pink). The male grave contains more than ten grave goods, of which seven are garnet adorned objects. 46 garnets were used for shaft and handle decorations upon the spatha found within this grave. The shared grave, both gendered male and female, also contains more than ten objects, only two of them contain garnets. Another male grave containing more than ten grave goods and another female grave containing six to ten objects are found upon this side, but a date is unknown.

*Table 31. Bergeijk-Fazantlaan cemetery*

Bergeijk-Fazantlaan cemetary, Netherlands

grave 65						

575   585   595   605   615   625   635
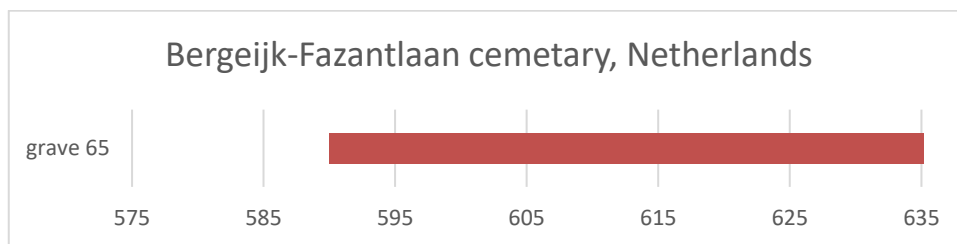
The Bergeijk-Fazantlaan cemetery[40] (tab 31) was in use from the end of the end of the sixth till the second half of the seventh century until the first half of the seventh century. The gender of the interred was not established. The only object found is the garnet adorned object, an umbo shaped disc brooch, containing nine garnets.

---

[39] Ament 1970
[40] Theuws & van Haperen 2012.

*Table 32. Engelmanshoven cemetery*
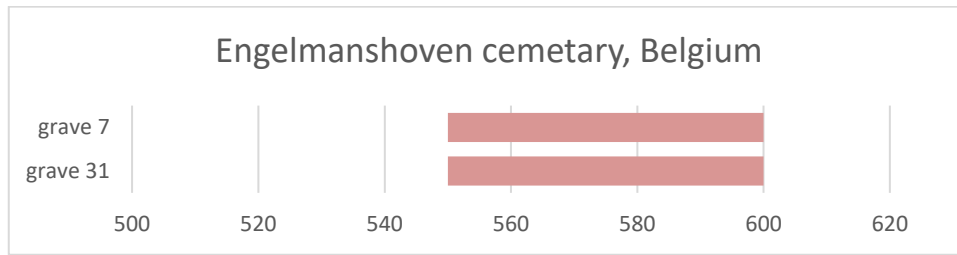
The Engelmanshoven cemetery[41] (tab 32) was in use from the beginning of sixth century until the first half of the seventh century. Both of the dated graves found to include garnet inlaid objects hold a gender reference. Both are female (pink) and contain six to ten grave goods, of which four are garnet adorned.

Table 33. The Arlon church
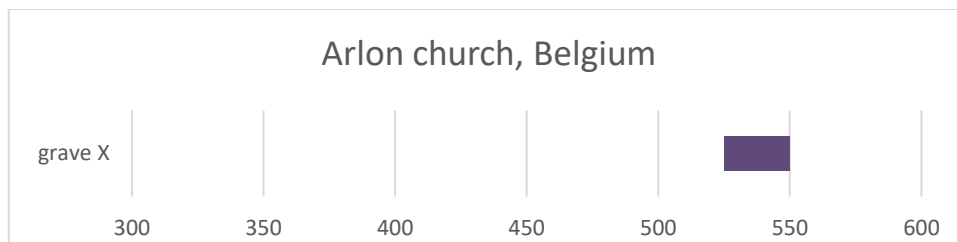
The Arlon church[42] (tab 33) was in use from the beginning of fourth century until the end of the sixth century. Only one dated grave was found to include garnet inlaid objects and was gendered male (purple). The amount of present grave goods is six to ten consisting of a bag mound, biconical pot, axe, glass beaker, spatha and two garnet adorned objects. The belt mount found is one of the richly decorated objects, containing 79 garnets. The accompanying belt buckle is adorned with ten inlays.

*Table 34. Venray-Anthoniusveld settlement*

---
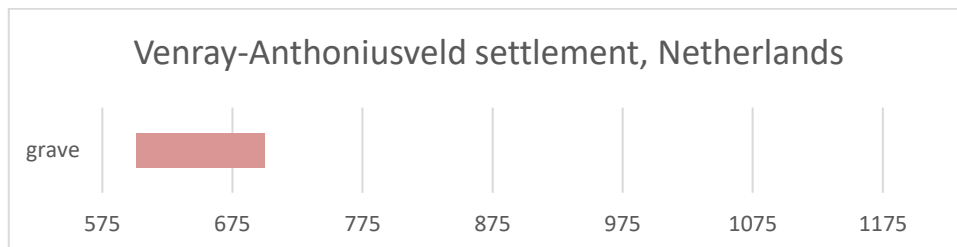
[41] Vanderhoeven 1977.
[42] Roosens, H. 1979

The Venray-Anthoniusveld (Venray) settlement[43] (tab 34) was in use from the end of the sixth century until the end 12th century. Only one dated grave was found to include a garnet inlaid object and was gendered female. The grave was found within one of the houses and is the only grave from this site. The disc brooch contains 58 garnets, which are mounted by use of single settings instead of the cloisonné technique and is the only grave good.

Table 35. Junkersdorf-Aachener Strasse cemetery
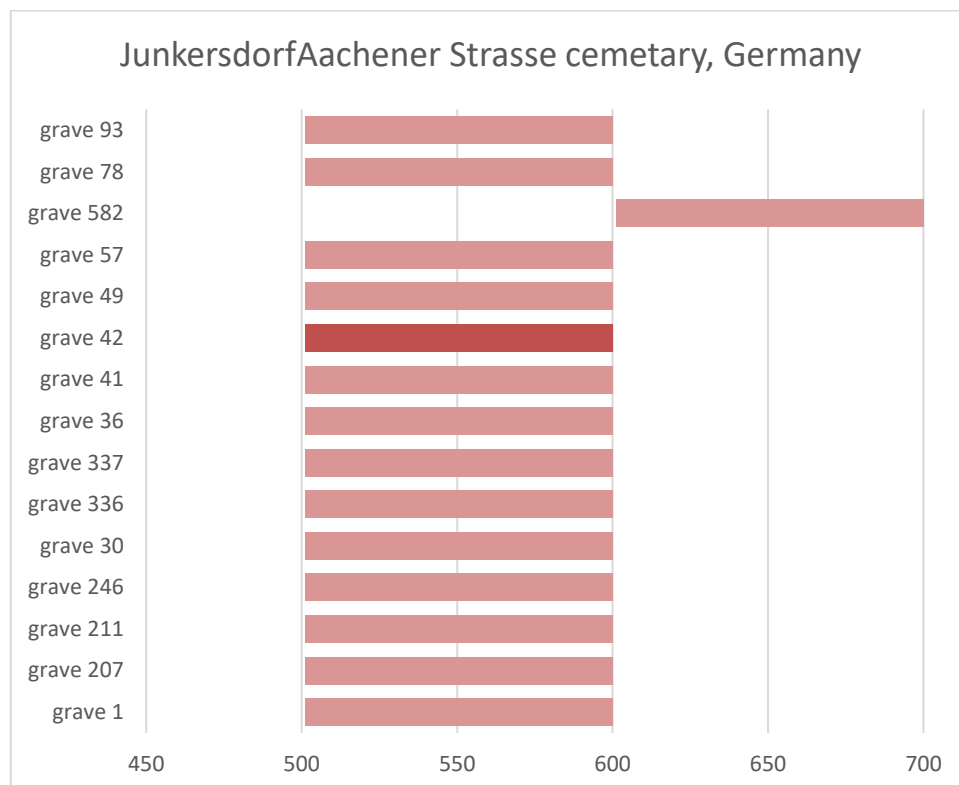
The Junkersdorf-Aachener Strasse cemetery[44] (tab 35) was in use from the second half of the fifth century until the end of the seventh century. 14 of the 15 dated graves found to include garnet inlaid objects hold a gender reference. They were all gendered female (pink). Grave 336 is one of the graves containing more than ten grave goods. Of these two contain garnet inlays. Three of the female graves contain between six and ten objects, of which seven inlaid with garnets. The other nine female graves contained between two and five objects of which eleven in total are adorned with garnets. The disc
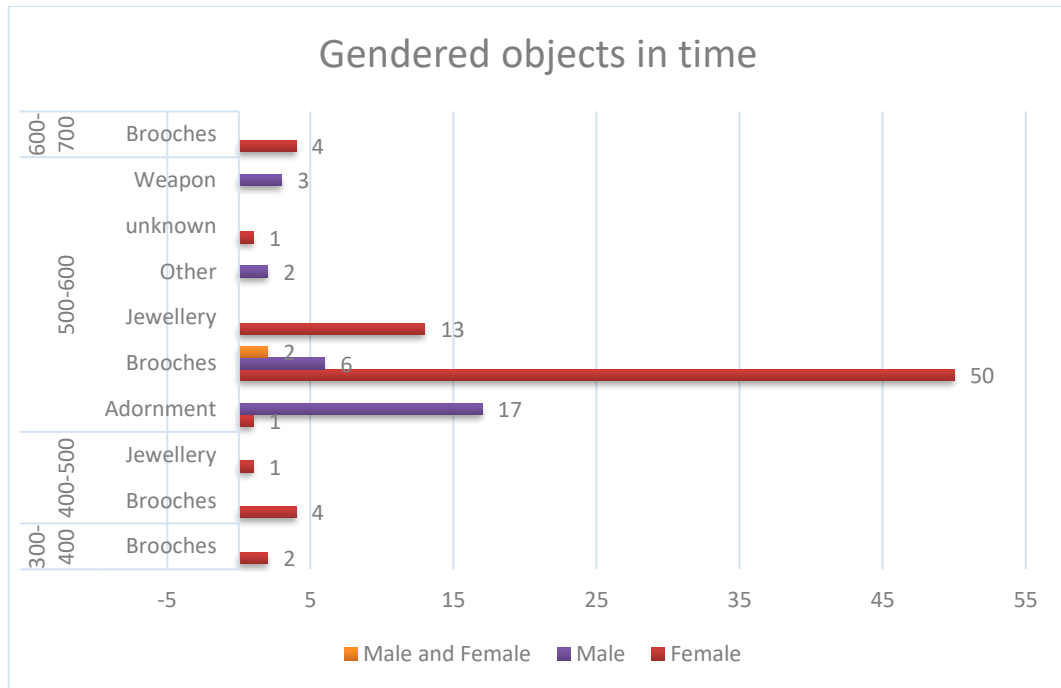
---

[43] Stoepker 2007
[44] La Baume, Bauermeister und J. Frechen 1967.

brooches from grave 78 and grave 246 contain more than 30 garnet inlays. The last female grave, grave 93 contains one object in total, containing a garnet inlay.

In total, 106 objects were found in the graves that are dated and hold a gender reference. In graph 36 is shown that the objects gendered female are found during the whole time period, whereas the male objects are only found in the sixth century.

Table 36. Gender objects in time

Gendered objects in time

Period	Object	Value
600-700	Brooches	4 (Female)
500-600	Weapon	3 (Male)
500-600	unknown	1 (Female)
500-600	Other	2 (Male)
500-600	Jewellery	13 (Female)
500-600	Brooches	2 (Male and Female), 6 (Male), 50 (Female)
500-600	Adornment	17 (Male), 1 (Female)
400-500	Jewellery	1 (Female)
400-500	Brooches	4 (Female)
300-400	Brooches	2 (Female)

Legend: ■ Male and Female ■ Male ■ Female

The objects found in the early (fourth and fifth century) and late (seventh century) contexts are female and consist of disc brooches, bird brooches and a ring. The earliest disc brooches are found in the second half of the fourth century (fig 37.). The bird brooches and jewellery item are present at the end of the fifth century. The only objects found in the seventh century are those of disc brooches.

In the sixth century both male and female objects are found (fix 37). The male objects, consisting of belt mounts and buckles, are introduced at the beginning of the sixth century and are found throughout the period. In the first half of the sixth century, garnet adorned weapons and saddle mounts are also found and some disc- (two) and rosette brooches (two) were also gendered male. Of the female objects the bird and disc brooches are still present throughout this period as do rosette and s brooches. Jewellery such as hair pins, pendants and earrings are found as well and in the second half of the sixth century, bow brooches are introduced. Two out of the four bow brooches were found within the grave that contained both a male and a female.

80

Table 37. Gender objects per period

Time period	Female
500-600	**64**
belt buckle	**1**
527	1
bird brooch	**5**
501-600	3
580 - 680	2
bow brooch	**3**
501-600	1
550	2
disc brooch	**32**
501-600	13
510 - 590	2
525-600	6
525-650	1
527	2
550-600	5
570-640	2
575-700	1
earring	**7**
501-600	2
510 - 590	2
527	2
550-600	1
hairpin	**2**
527	1
530-570	1
pendant	**3**
550	3
ring	**1**
550-600	1
rosette brooch	**8**
525-600	1
530-570	3
550-600	2
575-625	1
580-680	1
S brooch	**2**
501-600	1
530-570	1

Time period	Male
500-600	**28**
belt buckle	**4**
501-550	2
525-550	1
530-570	1
belt mount	**13**
501-550	2
520-530	10
525-550	1
disc brooch	**4**
501-550	2
520-530	2
rosette brooch	**2**
510 - 590	2
saddle mount	**2**
520-530	2
spatha	**1**
501-550	1
sword button	**2**
520-530	2
Eindtotaal	**28**

Time period	Male and Female
500-600	**2**
bow brooch	**2**
501-600	2

Time period	Female
300-400	**2**
disc brooch	**2**
350-400	2
400-500	**5**
bird brooch	**2**
485-530	2
disc brooch	**2**
450-530	2
ring	**1**
485-530	1
600-700	**4**
disc brooch	**4**
601-650	1
601-700	2
610 - 680	1

5.2. Comparative case studies

The data from the dataset (see above) will be incorporated into a larger research frame to make geographical and chronological comparisons. This will be done by comparing the findings against two case studies from outside the initial research area, i.e. the grave of Childeric and Sutton Hoo. Furthermore, these case studies will be used as examples of graves that are gendered male, for the dataset consisted of only a few male excamples. These case studies will be introduced here.

5.2.1. Childeric

Childeric's tomb was discovered in 1653 in Tournai / Doornik, in the proximity of the church of Saint-Brice. It is one of the most famous graves from the early medieval period and is sometimes referred to as the starting point of early medieval archaeology (James 1992, 245; Quast 2015,6). The grave is thought to belong to Childeric I, the first Catholic king of the Franks and father of Clovis. The grave is found upon a cemetery that remained in use until the seventh century and is dated till 481/482[45]. This grave allegedly is one of the earliest graves within this cemetery, and referred to as 'founders grave'. It is not known if the grave was marked upon the surface (James 1992, 245-246; Quast 2015,6). Within the grave, numerous objects were found, of which only a small amount remain, for in 1831 most of the objects were stolen from the Bibliothèque Royale in Paris. The objects that survived the robbery are some garnet cloisonné from a scabbard, two golden bees with garnet slaps as wings, a golden buckle and a ball made of rock-crystal. The remainder of the objects can be reconstructed using the publication of J.J. Chifflet in 1655 which included engravings and detailed information (James 1992, 245-246; Quast 2015,6).

---

[45] Although widely excepted, the date of the grave is subject to debate, see also Quast 2015,6.

The objects found are studied and classified numerous of times and there are still a lot of debates about the function and meaning of some of the objects. For instance, the presence of horse gear is mentioned, but no drawing is present. There are however around 30 golden bees found[46] inlaid with garnets, of which some scholars suggest they could have been pinned upon the horse harness, but others oppose this interpretation by suggesting they are a part of Childerics mantle or of the spata girdle (James 1992, 246; Quast 2015, 170). Other objects found are a solid golden arm ring, a seal ring with the inscription CHILDERICI REGIS, a throwing axe, a spatha, a sax, a cross bow fibula, over a hundred gold and silver coins, a part of agate and the rock crystal ball. Furthermore a considerable amount of objects containing garnets inlays, were present, such as belt-, bag-, and shoe mounts. Both the spatha and

Figure 15. Colourised drawing of the spata and sax garnet cloisonné - RGZM 1980 after Chifflet 1655. (Quast 2015)

the sax were adorned with garnet cloissoné, as well as the scabbards and the mounts of the adjoining belts (fig. 15). One of these mounts resembles the head of a bull (James 1992, 246; Quast 2015,166-182).

The total amount of garnet inlays is not mentioned, and neither are the amount of objects containing garnets, but it is one of the most lavished burials known from this time period.

---

[46] Chifflet mentiones over 300 bees, but only 27 were recoverd and only two still remain (Quast 2015, 170).

Near Woodbridge, two burials sites are located dating to the sixth and seventh centuries. The most famous burial of this site was found in 1939 under mount one, and is known as the Sutton Hoo ship burial. The ship burial was undisturbed and contained a lavish amount of grave goods. Archaeological parallels for this site are not known from Anglo Saxon England, but are found in Sweden (Vendel). The site has been subsequent to archaeological campaigns, mainly in the 1960s and 1980s (Bruce-Mitford 1950, 339-341; James 1992 243-244). The ship burial itself is dated to 650-670 based upon its finds, and assumed to belong to Readwald, the ruler of East Anglia at that time or his son Sigiberth, however a body was never found. The theory of a royal burial mound is widely accepted, as is the connection between the ship burial and the Frankish kingdom (Bruce-Mitford 1950, 339-341; James 1992 243-244). Objects found within the burial chamber are around 45 items of gold, of which many were decorated with garnet inlays, but is the most famous objects is the Sutton Hoo helmet and a large gold buckle with animal depictions. Objects that could be related to a geographical location are silver items from the Mediterranean, a large silver bowl with stamps from Constantinople, a unique harp from Egypt, and 37 Frankish coins of which 17 'mint-declaring'. A lot of clothing garments and weapons, such as an axe and spears, were retrieved from the burial as well, as were various drinking vessels, three hanging bowls and two silver (baptismal) spoons (Bruce-Mitford 1950, 339-341; James 1992 243-244). The objects that are decorated with garnets are of high quality and will be shortly presented here.

Within the burial a sword pommel was found, adorned with garnet cloisonné, as did the adjoining scabbard, domed bosses and pyramidal mounts. The big shield contained a garnet inlaid umbo shield boss, and parts of a lavishly decorated belt are found, the mounts and buckles adorned with garnet cloisonné. Two identical shoulder clasps from the harness (fig 16.) are decorated with garnet cloisonné, containing millefiori inlays as well, but also contains very detailed animal depictions inlaid with garnets, surrounded by filigree. The other lavish garnet find from the burial is the ornamental purse lid (fig xx). Mounted on a kidney shaped sheet of horn, various plaques of gold inlaid with garnets and millefiori are depicting animals such as birds and wolves and geometric motifs (Bruce-Mitford 1950, 339-341).

Information about the total amount of garnet adorned objects and garnets is not included within this short introduction of the Sutton Hoo finds, however, it can be

established that this site contains a lot of lavishly adorned objects, and therefore belongs to the category of rich graves.

Figure 16. Shoulder clasps (left) and purse lid (right) from the Sutton Hoo ship burial (British museum website)

Chapter 6: Discussion

This chapter discusses the gender representations of garnet adorned objects within early medieval burials and some suggestions about the social significance will be made. For this purpose, the data obtained within this study (see chapter five) will be combined with the burial and gender theory presented in chapter three. A short overview of known gender relations will be discussed and a connection with the dataset will be made. Social implications of the object types (chapter two) as suggested within the literature will be shortly discussed. These gender representations will be connected to other social constructs, such as status, and incorporated into the social background of the early medieval period. Differences and changes within the gender representations during the fifth till seventh century will be analysed both within the research area (dataset) and within the bigger scope provided with the comparative case studies. The limitations of the dataset, as set out in chapter four, will be used to assess the applicability of the data in order to answer the research questions, as set out in chapter one.

6.1. Gender within the dataset

The practice of depositing grave goods in burials during the Early Middle Ages is quite abundant, and a variety of objects can be found. Archaeologists have used these objects to discuss various social constructs e.g. gender (Ekegren 2013, 175; Loveluck 2013, 7; Sofaer and Sorensen 2013, 528-529; Theuws & Alkemade 2000, 411-417). As discussed in chapter three, there has been a lot of critique about the underlying generalisations that were used to determine whether a grave assemblage represented, for instance, a male or female burial, without reasoning why (Engelstad 2001, 6002-6006; Loveluck 2013, 7; Moral 2016, 791; Sofaer and Sorensen 2013, 530 − 532; Trigger 2006, 452,453). The study of Härke (2011) is based upon al known burial data from Anglo Saxon England, and the assigned (older) gender references are validated by new anthropological sexing of the available bone material (Härke 2011, 103). His study confirmed that objects found within early medieval graves occur in gender differentiated kits. Other means of communicating gender, such as the construction of the grave (complexity, spatial arrangement), or the positioning within the burial (orientation, pose) were barely present (Härke 2011, 101; Sofaer and Sorensen 2013, 534-535; Theuws 2009 293-297). The items generally found within female graves consist of dress items, such as brooches, objects associated with textile production, and bead necklaces and other jewellery. Other objects frequently found such as keys and knives are suggested to be part of the

dress items as well. Weapons, tools and drinking vessels are mainly found within the male burials and from the male garment, the belt fittings are recovered. Objects such as horse harnesses, musical instruments, gaming pieces and drinking horns are also found within male burials, but less frequently. Grave goods incorporated in both male and female graves are, boxes, knives, tweezers, firesteels and vessel (Härke 2011, 98,101-102). Objects that are inlaid with garnets cover a variety of these gender kit objects (see also chapter 2). Within the dataset of this study, 549 garnet adorned objects were found, of which 44% was recovered from context that contained a gender reference according to the documenting source. The majority of the objects present were obtained from the female contexts (86%). Object categories found within the female graves are those of the brooches and jewellery. The male graves predominantly contained adornments and garnet inlays associated to weapons (see also chapter 5.1.3. table 20). The ratio of the mounting technique for both the male and female objects is almost equal, with a slightly bigger percentage of cloisonné found within the male contexts.

Disc brooches (round-, rosette- and umbo shaped) are suggested to serve to fasten clothing and are thought to relate to the garment of woman. As a result of their function, they are mainly found in pairs (Vilietz 2003,103-121). Besides their function, disc brooches are suggested to correlate with objects of reflecting status, based upon the Imperial brooches depicted on roman coins, medallions and mosaics (Arrhenius 1985, 196). Within the dataset they represent more than 60% of the amount of brooches found and they are often encountered in a matching set as well. They are predominantly found within the female graves, but a few examples from male graves are present as well. These do not significantly differ from those found in women's graves. The earliest disc brooches found within a female grave dates to the second half of the fourth century. These brooches are found throughout the research period and continue to be used into the seventh century, although in lesser quantities.

Of the figurative plate brooches (bird, s, diamond, quaterfoil, square), the bird brooches are referred to by Arrhenius to emerge around 475 AD as a new type of female brooch. They are suggested to relate to the Nordic animalistic style and represent eagles or ravens. These birds have a distinct position in Norse and Germanic mythology and are thought to related to the creation and legitimisation of power (Hedeager 2008, 13; Hedeager 2011, 83-85). The figurative plate brooches represent 22% of the overall amount of brooches, of which the bird brooches and S brooches are the most frequently

found types of this category. These brooches are present in the sixth and seventh century.

The *bow brooches* are described in the literature to be mainly found in matching sets and thought to be a part of the female attire (Arrhenius 1985, 188-198; Heeren & Feijst 2017, 207-211; Koch 1998). The sub-category disc-on-bow brooches however are generally not found in sets and are thought to be used to fasten necklaces. Within the literature some symbolic references to the Nordic Saga are suggested and they are thought to be signalling status (Arrhenius 1969 in Arrhenius 1985, 198; Olsen 2006, 479–528). This notion is based upon some examples from Scandinavia which are more that 30cm long. Amulets found depict woman wearing this type of brooch upon their upper body, close to the neck. This, combined with their wholly covered surface suggests their relation to the mythical necklace of Freya, called *Brisingamen*, which means flaming jewel (Arrhenius 1969 in Arrhenius 1985, 198). Bow brooches are lesser represented within the dataset and are only found in female graves. Within the research area they are found during the sixth century. Two disc-on-bow brooches were found, but they did not contain a gender reference.

Objects that can be defined as jewellery, such as earrings, pendants, hairpins and rings are the second largest category found within our research area (12%). They are found during the sixth century within the female graves. One hairpin (with bird) is observed to date to the fifth century, but no gender typology was known. Objects relating to clothing adornments, such as belt fittings are not directly categorized with the label jewellery and are mainly found within male graves (eight percent). Only one and a half percent of objects found classified as a weapon, or did not meet any description of the categories (one percent). Those are predominantly found in male graves to. The female kit in this regard, associates with the material category that is associated with the body, known from mortuary theory, as do the adornments of the male gender kit. The weapons however classify as those that are separately incorporated within the burial, and could therefore been deliberately have placed with the deceased (Ekegren 2013, 175; Price 2008, 260). As mentioned however in chapter three, these two categories are exchangeable, making it difficult to conclude if the objects have a direct link to the person or are part of the burial ritual (Ekegren 2013, 175; Price 2008, 260).

As discussed in chapter 4, the main documenting sources used to assemble the dataset are in some cases very old and anthropological sexing has been not been conducted in the majority of cases. The study of Härke (2011) functions as a good comparative study, in relation to gender differentiation within the (mortuary) material culture. The study of gender representation within an archaeological society is best emphasized when results from a within a cemetery and from within a region are compared with one another. Without these comparisons it is difficult to create a framework about the aspects within a society that could provide information necessary to interpret the gender representations, or the lack thereof (Engelstad 2001, 6005; Moral 2016, 791; Sofaer and Sorensen 2013, 531, 534-535). If we follow this line of reasoning, the study of Härke (2011) can be used to substantiate the findings within the dataset itself and we could suggest gender associations for the remaining data.

As shown in table two of chapter five, the categories associated with the female gender kid such as brooches and jewellery cover around 88% of the total amount of garnet objects found within the research area. The male addressed objects such as the belt fittings and weapon related objects cover about 11% of the found objects. In general, the gender kit as described by Härke (2011) is also observed within the graves found within the research area (see also chapter 5.2.1.). Clothing adornments, jewellery and bow brooches (all without garnets) and some tools such as a key, a knife and a spindle whorl are found within the graves that suggest a female gender. Also jewellery of beads, and glass beakers are found within the female graves. The male graves contain axes, lance heads, umbo's, spatha's, francisca's and arrow heads. Bowls and pots from ceramics, coins and bag mounds (with and without garnets) are found in both the male and female graves. The gender differentiation within the garnet objects therefore seems pretty distinct. We must keep in mind however, that this is a suggestion, because the dataset was inadequate to assess the relation with the total grave good assemblage in detail. Furthermore it is important to keep in mind that the research of Härke (2011) used anthropological sexing to establish the gender of the objects. This is something that is discussed within gender archaeology theory as possible reducing the cultural aspect of gender again to a biological category (Sofaer and Sorensen 2013, 532). They argue that as a consequence, cross gender cases are seen as an anomaly, instead of a result of the identity of the interred (Härke 2011, 103; Hedenstierna-Jonson et al. 2017, 857-858). Some cases of cross gender assemblages are known from the early medieval

period, such as the female Viking warrior in Birka[47] (Hedenstierna-Jonson et al. 2017). This is also the case within the current dataset. Pandhof grave 10365 is the only known biological male within the dataset that contains a female gender kit. The grave goods consist of two garnet rosette brooches and a necklace of beads (Kars 2011, 119). So the possibility that other cross gender cases are present is not to be disregarded, however the current state of research within the dataset is not sufficient to incorporate this within this thesis.

6.2. A social construct

The previous paragraph has coupled the dataset of chapter 5 to male and female gender. It also discussed some of the problems with gender in the realm of material culture. In the paragraph we further discuss what a "female" or "male" object means. Gender archaeologists suggest that the questions regarding sex and gender can only be asked when incorporated within the bigger social narrative. So it is important to ask if these questions are relevant for the society under study, and if gender is a demonstration of identity or as a social concept (Moral 2016, 791; Sofaer and Sorensen 2013, 529 - 532). Therefore the social background of the early middle ages is important in regard to interpret the observed gender display within the dataset.

As described in chapter two, the transition from the Roman to the Early Medieval period saw many changes, such as the organisation of society (Halsall 2014, 517; Härke 2016, 121; Sarris 2011, 77-83). Furthermore, the monumental art style from the Roman era became out of fashion and the focus shifted towards an art form with more symbolic value, or as Roth (1979) described it, *Kleinkunstproducte.* (Härke 2001, 25; Roth 1979, 35-36). The Roman monuments had been used to communicate power and status, also in death (grave monuments). The argument is that the material culture of the early medieval period became a materialization of social and political legitimacy as well, for the hierarchical positions had to be redefined. Rituals and ceremonial acts such as burying the dead can be used to communicate ideas and values (Childe 1945 in Härke 2014; Hedeager 2000, 17-18). Suggested by scholars is the relationship between the Scandinavian belief system and the figurative representation of these myths to legitimize the newly created political power within the Frankish Merovingian kingdom.

---

[47] Osteological research in 2016 already suggested the female sex. But until the sex of the female Viking warrior was confirmed with genome-wide sequence data and mtDNA in 2017, scholars had been reluctant to acknowledge the agency of woman with weapons (Hedenstierna-Jonson et al. 2017).

Archaeological examples hereof are the bird brooches and disc-on-bow brooches that are found within our research area as well. They are linked to the Nordic saga by the animalistic style and the flaming jewel of Frya. The Sutton Hoo ship burial is also seen as a connection to the Scandinavian customs, for the only parallels are found within Sweden (see also chapter five) (Arrhenius 1969 in Arrhenius 1985, 198; Hedeager 2008, 12-13; Olsen 2006, 479–528).

The material culture is not only a physical representation of hierarchical powers but also functions as a means to establish (social) relationships. This is mainly accomplished with the practice of gift giving (Hedeager 2011, 137; Mauss 1990; Roth 1979, 35-36; Sofaer and Sorensen 2013, 528-529; Theuws and Alkemade 2000, 407-413). The objects procure their meaning through the social interactions (object biography), such as the brooches worn by people returning from the roman front (Kars 2012, 109,115,116; Roth 1979, 35-36). The practice of gift giving in creating political alliances is also demonstrated in early medieval texts such as *Beowulf*. The gifts known from Iron Age Scandinavia[48] mainly contain ornamented items of gold and silver and Arrhenius (1985), as mentioned in chapter two, described the use of high quality garnet work in the establishment of alliances (Arrhenius 1985, 188-198; Hedeager 2008, 14). Arrhenius describes the presence of garnets upon status objects and the occurrence of garnet work from different origins within the same cemetery. One of these status objects refer to the round disc brooches, present within the research area, which could represent the Imperial brooch known from Roman coins, medallions and mosaics, which was thought to be related to-, and being a gift from the emperor (Arrhenius 1985, 188-198). As a result, it can be suggested that the presence of high quality objects could indicate status and power. The round disc brooches in our dataset are usually connected to the female gender, therefore pointing towards a importance of (certain) female individuals. However, these assumptions remain inconclusive without further research.

As discussed in chapter three and four, the perceived value of objects is depending upon a combination of the quality of the craftmanship and the quality of the used materials. The mere presence of garnet upon an object alone does therefore not determine the value (Arrhenius 1985, 195; Sorg 2011, 138; Quast 2012,32) even if the garnets are cut within central places based upon templates and already assembled in a 'emblemata' as suggested by Arrhenius (1985). Which is currently under debate due to

---

[48] 400-1000 AD

the find of proof for garnet working within Gamla Uppsala (Ljungkvist *et al* 2017). However it is certain that the cutting of elaborate garnet forms takes more time than straight edged garnets. Exquisite patterns therefore take more time and call for different techniques, adding possible more value to an object (Arrhenius 1985, 195-196). Furthermore, objects which contain a higher number of garnet inlays take more time to be assembled and demand a larger influx of garnet (Arrhenius 1985, 195-196; Calligaro 2004, 109; Quast 2012, 321-322). Following the hypothesis that high quality objects indicate status and can therefore be seen as a luxury good, which provides a hierarchy within the gave good assemblages (Christlein 1973 in Quast 2012; Quast 2012, 321). This is something that has to be done cautiously, for this creates the possibility of circular reasoning; the presence of high quality objects indicate a rich burial and a rich burial contains luxury goods. The argumentation why elaborately decorated garnet objects are of a higher value nonetheless seems decent enough to be used as an indicator to discuss the results of the database as presented in chapter 5.2.1.

Within the dataset nine objects can with be described as rich objects, for they contain almost 20% of all the garnets found within the research area (see also chapter 5.2.1. table 10). Of these objects, the disc-on-bow brooch of Wijnaldum contains by far the most garnet inlays, with a count of 350. This brooch is found as single find upon a terp and did not receive a gender reference. Based upon the literature, this object would receive a female gender, due to its link with the goddess Frya, and the function to fasten necklaces (Arrhenius 1969 in Arrhenius 1985, 198; Olsen 2006, 494,497). The rich objects contain types of objects that are not frequently found, such as a bag mound, two saddle mounts and the two disc-on-bow brooches. The case studies of Sutton Hoo and Childeric did not mention the numbers of garnets present upon the objects, but based upon the pictures and descriptions of the objects it is safe to assume they associate with the rich examples from the database. As illustrated in table 11 of chapter five, more objects contain a small amount of garnets, and objects with a larger amount of garnets are found in lesser quantities, substantiating the hypothesis that the value of rich objects is represented by their scarcity. Five out of the nine richly decorated objects are recovered from contexts gendered male. If the disc-on-bow brooches are counted female, two remain. Those are single finds, and as consequence a gender reference based upon the gender kit is difficult. The dataset shows that the majority of garnet inlays (74%) is found upon objects that were found within female gendered burials, on average however, these objects are not very richly decorated. When taking the ratios

between the garnets found upon a certain type of object and the amount of objects found within this category into account, the categories of the male gender kit represent 85% (see also table 12 of chapter 5.1.2.). As been described in chapter 4, the number of inlays presented here is an estimation based upon the minimum number of inlays. This would suggest that the more "richly" decorated objects could be considered as related towards the male gender. This however is not necessarily the case. Since the main part of our dataset is argued to be of female gender and richly decorated objects are very rare, one could consequently claim that female objects are "poor" objects. This correlation is however not significant, for objects with a high number of garnets are also gendered female. Therefore, no conclusion can be drawn as to rich or poor objects being male or female, but one can conclude that when male objects are encountered, they are on average containing a lot of garnets.

When looking at the amount of objects that are deposited within the grave, the difference between male and female burials is visible. Four of the context gendered male (out of nine) contained more than ten grave goods, opposed to only one of the female gendered graves. The burials of Sutton Hoo and Childeric also contained a substantial amount of grave goods and represent the male gender. With the female graves, 60% falls in the range of two till five grave goods, 22,6% contains six till ten and a little more than 16,5% contain no other objects besides the garnet inlaid object. Three of the male graves contained two till five and two contained six till ten grave goods.

Interestingly the graves with a lot of objects do not automatically contain objects with a large number of inlays, however the rich objects are predominantly found within contexts containing more than six objects and more than ten objects. When the contexts without stated gender reference are taken into the equation, the majority of the contexts with more than one find hold between two to five objects. A little less than eight percent contain between six and ten objects and the eight rich graves represent two percent of the contexts found. Three of these rich burials are recovered from the site of a church. Burying the dead within a church is, as discussed in chapter two, suggested to emerge as a specific elite burial rite (Härke 2001, 9-10; Hodges 2012, 66-67; Theuws & Alkemade 2000, 448-449). In total there are three church sites represented within the database, two sites contained burials with six till ten, or more than ten objects. The third contained burials with single finds and assemblages up to five objects. Both male and female graves are represented at the church sites.

In total, almost 50% of the found garnet objects are unaccompanied by other objects and classify as single find. It is therefore difficult to conclude without hesitance which gender they represent, for the combination with other grave goods is suggested by gender archaeologists to be of importance (Engelstad 2001, 6005). They do however fall in the categories of which the gender has been established. One could argue that the presence of the garnet object on itself was meant as a gender representation within the grave, because of the quantities they are deposited alone. This hypothesis however needs testing against other burials found within the same region that do not include garnet objects. This is unfortunately not possible within the present research, for this information was not included within the database.

6.3. Changes in time and space

The act of burying the dead is regarded as a social ceremony, which can be used to transfer ideas and forge relationships (Ekegren 2013, 177; Härke 2014, 46,54; Price 2008, 267-270; Sofaer and Sorensen 2013, 530). As discussed in chapter three, ceremonies, or rituals, frequently follow a pattern of rules which are known by the actors. These rules however can change over time, for the meaning of the ritual can be perceived differently or be forgotten and the social relevance lost (Ekegren 2013, 178-179; Loveluck 2013, 7). Objects are thought to be an integral part of the ritual, for they are the 'material embodiment' of the social processes that are the keystones of these rituals (Ekegren 2013, 179; Mauss 1990; Sofaer and Sorensen 2013, 533). As a consequence, the material culture found within the burial is expected to change as well. Härke (2011) describes a decline within the gender representation of the objects within the Anglo-Saxon burials from the seventh century onwards. For the male graves, the gender representation disappears more rapidly than within the female graves, but within the first half of the eight century most of burials found do not express a gender anymore (Härke 2011, 101-102). Within the dataset, 106 objects were found in graves that contained both a date and a gender reference within the literature. As illustrated in tab. 36. from chapter 5.1.4., the objects that were found within the female graves are found throughout the whole time period, whereas the objects obtained from male graves are only found within the sixth century. The contexts found that received a date, but no gender reference will be included here as well, but still almost 80% of the contexts within the dataset will have to be excluded. Most of the contexts are dated between 500 and 600 AD so the majority of the objects are dated within this period as well. This could be interpreted as a bias, but, as can be seen from the cemetery dates in

the various graphs in chapter five, the cemeteries were used within a broader time frame.

The earliest objects are found within the second half of the fourth century and consist of disc brooches. At the end of the fifth century bird brooches, and jewellery items are also present. One bow brooch was also found, but the grave was dated between 450 and 600 AD so this date is not entirely certain. The male objects, consisting of belt mounts and buckles, are introduced at the beginning of the sixth century, as do the garnet adorned weapons. Of the female objects the jewellery items, bird and disc brooches are still present throughout this period and rosette and s brooches are introduced. In the second half of the sixth century, bow brooches are found as well. The disc and disc on bow brooches are the only objects that are still found within the seventh century.

All the contexts that contained a grave assemblage of more ten objects are found within the sixth century. The early context from the fourth century has a grave assemblage from two till five objects, and during the fifth century the graves with only the garnet adorned object as grave good start to appear. The grave good assemblages with six till ten objects are observed from the fifth century onwards, and stretch into the seventh century. Although most of garnet adorned objects are found within the sixth century, there are more garnets used for a lesser amount of objects during the seventh century and also the lavishly decorated disc on bow brooch is assigned to this period. As discussed in chapter four, it is important to keep in mind that the general trends are counted in frames of a hundred years, and in order to do so the oldest mentioned date is used. This could influence the outcomes of the dataset. Furthermore, a lot of the sites are based upon objects found within the grave and this date is used within this research. As a result, the garnet object itself could be older than the context it was deposited in, or the context could be younger than suggested by the presence of certain objects. It is however not possible to correct for this bias within the current research.

It is interesting to note, that the observed representations do not coincide with the dates of the rich male graves of the case studies. The grave of Childeric was dated to the end of the fifth century and the burial of Sutton Hoo to the end of the seventh (Bruce-Mitford 1950, 339-341; James 1992 243-246; Quast 2015,6). When combining this information, one could suggest that, however more objects containing garnets are found within early female burials, they are contemporaneously found with lavishly

decorated male objects found within one grave. This implies the presence of garnet objects within the male gender domain earlier than the data within the research area suggests. What follows is the emergence of more types of garnet adorned objects, which are deposited within male and female burials. After the sixth century, the amount of garnet adorned objects declines, and are only found within supposedly female burials. Within the North Sea area however, a new type of object is introduced which is decorated whit a lot of garnets and is associated with woman; the disc on bow brooch. Furthermore, around the same time within Anglo Saxon England a lot of richly decorated garnet objects are found within the male burial of Sutton Hoo.

The above mentioned geographical difference is not the only ones observed within the dataset. As discussed in chapter five, there are slight differences within the types of garnet objects present within the various geographical areas. The bow- and disc brooches are predominantly found within the modern German region of the research area. This is also the case for objects such as belt mounts and belt buckles. Bird brooches are fairly evenly distributed throughout the area, the S brooches however are mainly found within the region of Belgium, as do the objects classifying as jewellery. The rosette brooches are mainly found within the Netherlands and Belgium. These observed differences suggest that there are some regional variations upon which objects are adorned with garnets and turn up within the grave. This would associate with the theory that rituals are based upon a grand narrative, but are interpreted differently by different actors, and are subjected to variations and changes (Ekegren 2013, 178-179; Loveluck 2013, 7). However, the database is restricted by the availability of the sources and the intensity of research within the different areas. Combined with the differentiating preservation conditions (Berendsen 2008, 124-129, 382; Lyman 1994,404-416). Furthermore, as argued in chapter four, these regions are based upon modern day boundaries, so the distribution patterns of the material studied do not necessarily reflect the situation within the Medieval period.

In conclusion, garnet adorned objects seem first to be found in a small quantity within woman's graves, before they are introduced within the male domain. At the end of the fifth century they are first found related to a male context within a very rich burial. This marks the emergence of more types of garnet adorned objects, which are deposited within male and female burials. The amount of garnets used per object has increases compared with the fifth century, as do the amount of accompanying grave goods found. However, during the sixth century a lot of single settings are present as

well. After the sixth century, the amount of garnet adorned objects declines rapidly, but the remaining objects contain relatively many garnets and are only found within supposedly female burials. Within Anglo Saxon England however, a male grave is found, with a lot of very extensively decorated garnets objects, suggesting a geographical shift in the use of garnet inlaid objects. However, 80% of the dataset was not included, for no date other than 'early medieval' was available.

6.4. Representation in death

As discussed within chapter three of this thesis, burials within archaeology and other disciplines are regarded as one of the few archaeological contexts that are actually a representation of intentionally activities that remain preserved in time. Furthermore, the act of burying is conducted by the living and obtains a particular importance within the archaeological studies. The objects present within mortuary contexts are more than their mere functional purpose within life, but could also have been used to (re)construct social relationships and redefine identities (Ekegren 2013, 175, 177; Härke 2011, 104; Hedeager 2011, 137; Theuws and Alkemade 2000, 407-413; Sofaer and Sorensen 2013, 528-529). Because this social importance, gender archaeologists have argued that, despite the discussed difficulties, the mortuary contexts are quite suitable to analyse gender representations within a certain society (Conkey and Spector 1984; Geller 2009, 66; Sofaer and Sorensen 2013, 533). As discussed above (6.1) and illustrated within chapter five, gender differences are analysed to be present within the dataset under study. A conclusion substantiated by the research of Härke (2011). The presence of clearly distinct gender differences within the mortuary context suggest the people of Frankish-Merovingian Europe were aware of those differences and felt the need to express this within the burial (Geller 2009, 66; Härke 2011, 98; Sofaer and Sorensen 2013, 533).

The underlying reasons of why a society chooses to define gender and other social strata within the burial are not unambiguous and the leading suggestions are mainly based upon a combination of theory and interpretation (Härke 2011, 102; Sofaer and Sorensen 2013, 531, 535). As described within chapter three and above (6.2), the early medieval period saw a variety of changes. Establishing social relations within the burial became important, for the relations within the society where not as defined (Halsall 2009; Härke 2011, 102-104). Two motives suggested within mortuary archaeology seem to possibly apply upon the dataset represented within this study, within the framework of gender theory.

The first suggested motive is based upon the ritually depositing of wealth within a burial, in order to propagate status and influence within society (Childe 1945 in Härke 2014). The representation of the social and economic loss of the deceased was an active attempt of the people surrounding the deceased to create, confirm and establish such a social reality, and gain some status in the process (Halsall 2009, 125; Härke 2011, 104; Härke 2014, 47; Hedeager 2011, 144; Theuws 2009 285-301; Theuws and Alkemade 2000, 407-413). This practice could apply upon the case study of Childeric and Sutton Hoo, for these burials are unique in their demonstrated wealth, and are sometimes referred to as 'founders graves' (Bruce-Mitford 1950, 339-341; James 1992 243-246; Quast 2015,6). Within the dataset under study, the burials containing more than ten grave goods and containing a lot of extensively decorated garnets objects, such as the one of Krefeld-Gellep could also be interpreted this way. These graves mainly seem to indicate a supposed male gender (see also chapter five) and predominantly contain garnet objects of the category that are deliberately placed within the burial, such as weapons (Ekegren 2013, 175; Price 2008, 260) .

The second suggested motive is the concept of inalienable property (Reinecke 1925 in Härke 2014). This seems to concur with the observations that a lot of the garnet objects found, classify as objects related to the body, and therefore the persona of the interred (Ekegren 2013, 175; Price 2008, 260;). The Nordic animalistic style, known from the garnets objects as well, (see chapter two and 6.2.) seems to correspond with this notion. The *fylga,* a protective animal spirit, is connected to a person from birth to death, after which they can be transferred to a different member of the family (Hedeager 2008, 12-13). This concept seems to be applicable predominantly with the objects suggested to be female, such as the disc-on-bow brooches. It could also hold the explanation why almost 50% of the garnet adorned objects are found as only grave good, even if they seem to indicate status.

Both explanations however do not take the concept of object biography into account (Arrhenius 1985, 14-15; Kars 2012, 109,115,116). Nevertheless, the early medieval burials display distinctive gender differences, which also seem to take part within a different sort of ritual, which could indicate different or less distinct gender roles in life (Childe 1945 in Härke 2014; Halsall 2009; Härke 2011, 102-104)

Chapter 7: Conclusion and future research

The conducted research within this study was inspired by the 'Gemstones in the first Millenium AD' conference which I attended in 2015. During this conference I became aware of the multiple social implications of these objects that were not yet subject of study. In order to add to the current ongoing research of the 'Weltweites Zellwerk' the subject of this thesis became the change in gender representation of garnet adorned objects in Frankish-Merovingian Europe during the fifth and sixth centuries and the observed shifts to this regard in the seventh century in relation to the North sea cultures from Anglo Saxon England and Scandinavia. This chapter will presents the conclusions and possible answers to the research questions of this thesis as presented in chapter one. In addition, suggestions for future research are discussed.

7.1. Gendered garnets

The research question *how are garnet adorned objects used to communicate gender associations within the Early Medieval burial practices?* will be answered where possible by discussing the various sub questions.

7.1.1. What type of objects are adorned with garnet inlays?

Within the research area 549 objects are found distributed about 105 sites. These objects can best be described as embellishments. The object type that is predominantly found with garnet inlays are the garnet disc brooches. Other types of brooches, such as figurative plate brooches and bow brooches are also present, but in far lesser quantities. Other objects found that contain garnet inlays are objects that classify as jewellery, earrings, pendants, hairpins and rings. Belt fittings (buckle, tong, mount) are not directly categorized with the label jewellery but are present in the dataset as well. Garnet inlaid weapons, such as scabbards and spatha are found in minor quantities and only a few objects do not categorise at all, such as a bag mount, saddle mounts and a hanging bowl. Objects from these categories are also present within the comparative case studies, but also additional objects were found, such as garnet inlaid bees, a sax, a helmet, a shield and shoulder clasps. Garnets therefore seem to be predominantly found upon a certain array of objects, with some exceptions.

7.1.2. Which significant difference in the geographical and chronological distribution of garnet adorned objects can be seen?

Garnet inlaid objects are found throughout the whole research area, but seem to be clustered around well accessible places, such as rivers and old roman roads. The types of objects found within the research area show slight differences in the geographical dispersion, suggesting regional variation. These regions however are defined based upon modern day boundaries, and do not necessarily reflect the early medieval situation.

A certain difference within the chronology of these objects is also observed. The earliest objects found are disc brooches. They appear within the second half of the fourth century and are predominantly found within the modern German region of the research area. At the end of the fifth century bird brooches, and jewellery items are also present. The bird brooches are fairly evenly distributed throughout the research area, but the jewellery items are mainly found within the region of Belgium. Belt mounts and buckles, mainly found within Germany, are introduced at the beginning of the sixth century, as do the garnet adorned weapons. jewellery items, bird and disc brooches are still present throughout this period and rosette and s brooches are introduced. The weapons do not display a certain geographical dispersion, whilst the rosette brooches are mainly found within the Netherlands and Belgium. The s brooches are mainly found in Belgium as well. In the second half of the sixth century, bow brooches are found as well, and appear mainly in Germany. The disc and disc on bow brooches are the only objects that are still found within the seventh century.

Most of the garnet inlaid objects are dated to the sixth century. Consequently, the highest amount of garnet inlays is present within this period. It is also the period with the highest variety of inlays found upon an object, from single setting to the richly decorated objects containing more than 60 garnets. However, when at the ratio, there are more garnets used for a lesser amount of objects in the seventh century and one of the richest objects, the Wijnaldum disc on bow brooch, is also dated to this period. In the fifth century the number of garnets present upon an objects is not very high, varying between one and six.

The contexts within the sixth century also vary from the others in the amount of accompanying grave goods that were present. All the contexts found within the research area that contained more than ten grave goods were dated to this period. Graves that

only contained a garnet inlaid object are first encountered within the fifth century, and remain in use till the seventh century. The observed representations within the research area do not coincide with the dates of the rich graves of the case studies. The grave of Childeric was dated to the end of the fifth century rich graves and elaborate objects are present earlier than suggested from the database. The burial of Sutton Hoo dated to the end of the seventh century suggests a shift of the elaborate garnet used towards England. These conclusions based upon the chronological distribution however are not inconclusive, for 80% of the contexts did not contain a date.

7.1.3. What are the differences in the occurrence of garnet adorned objects in male and female graves ?

From the contexts found to contain garnet inlaid objects, 44% included a gender reference according to the documenting source. Within the research area the majority of the objects was found within female graves and comprises of those of various brooches types and jewellery. The male graves predominantly contained belt fittings and weapons decorated with garnet inlays. The objects divergent from the standard array, such as saddle mounts, were also found within the male gendered burials. The ratio of the mounting technique for both the male and female objects is almost equal, with a slightly bigger percentage of cloisonné found within the male contexts. Because most of the objects found are gendered female, the majority of the garnet inlays are present upon these objects as well. However, when taking the rations into account, these objects are not all richly decorated. The male objects on average contain more garnets, especially when the burials of Childeric and Sutton Hoo are incorporated, but not all rich objects are male.

Differences between the male and female burials is also visible when looking at the amount of accompanying objects that are deposited within the grave. Only a few male contexts are found, but almost half of these contexts contained more than ten grave goods, opposed to only one of the female gendered graves. The female graves mainly consist of two till five grave goods.

The presence of garnets upon an objects not exclusively determines the gender of the burial, but the object upon which the garnet is set is relevant to this regard. Furthermore, the amount of garnets found upon an object varies with the female objects. Objects containing few garnets are not always female, but male objects often contain a large number of garnets. However, objects containing garnets are mainly

found within female contexts, suggesting the use of garnets was more common among woman.

7.1.4. Which significant differences in the geographical and chronological appearance of garnet adorned objects can be seen in relation to gender.

Objects argued to be of female gender are found throughout the whole time period, whereas the objects obtained from male graves within the dataset are only found within the sixth century. During the fourth and fifth century, the objects are found in small quantities. At the end of the fifth century a rich male context (Childeric) is encountered, containing a lot of garnet objects. Following this example, more types of garnet adorned objects come into fashion during the sixth century, and are found within both male and female burials. The amount of garnets used per object has increases compared with the fifth century, as do the amount of accompanying grave goods found. After the sixth century, garnet objects within our research area are only found within supposedly female burials , but the amount of garnet adorned objects declines rapidly. The remaining objects contain relatively many garnets and also the Wijnaldum brooch is dated to this period. The Sutton Hoo burial of Anglo Saxon England, is dated to the seventh century. This burial is gendered male and contains a lot of very extensively decorated garnets objects, suggesting a geographical shift in the use of garnet inlaid objects.

7.1.5. Are garnet adorned objects prestige objects or commonly found?

Within the database, it is apparent that more objects are found containing a small amount of garnets, and objects with a larger amount of garnets are found in lesser quantities. The objects found with a large number of garnet inlays incorporate the divergent type of objects, but also objects from the common array of objects are found, such as belt mounds and disc brooches. Based upon the description of the physical properties when available, most of the objects were gold coloured. The quality of the material however, both of the metals and the garnets themselves, could not be studied, because the objects were not present. The graves within the research area containing a lot of garnets are not automatically the ones containing objects with a large number of inlays. The rich objects however are predominantly found within contexts containing more than at least six objects accompanying grave goods. The majority of the garnet inlaid objects are found unaccompanied by other objects, and even when more objects

are present, this mostly does not exceeds five. As a result we could conclude that the presence of a garnet upon an object does not necessarily means it's a prestigious object and in general they are commonly found. However, not all the burials present within the early medieval period contain objects adorned with garnet inlays, and some very elaborate examples of garnet inlaid objects are present also within the research area. Consequently, garnet inlaid objects can be both common and prestige.

7.1.6. What is the correlation between the amount of garnets used and the social importance of an object?

Multiple suggestions about the possible social importance of the amount of garnets upon an object are discussed within this thesis, such as the practice of gift giving, which would call for more elaborate objects, or the communication of status through parallels with the Roman world or the Norse Saga. It is certain that some very elaborate objects inlaid with garnets are found. However, the data available within this research was not sufficient enough to answer this question.

7.2. Future research suggestions

Throughout the research concerning this thesis, it came apparent that a lot of different questions regarding the gender representation of garnet object could be explored. These options, together with ways of possibly improving the current research will be presented below.

- Based upon the gender theory as presented within this thesis, the importance of scientific analysis of the human bone material became clear. Within the current state of research, the cross gender assemblages are frequently missed or neglected. These graves could add some viable information to the understanding of how a society perceived gender.
- A detailed discussion of the total find assemblage in relation to each other and the whole site or region can add to the understanding of gender emphasis. This means a lot of data is necessary to make gender comparisons. The database of this thesis was suitable for a general overview, for it focussed only upon the graves containing garnet objects. The available data could be extended with additional information in order to make complete comparisons.
- The research concerning if the garnet objects are commonly found or prestige could be expanded, by validating how many of the graves in relation to the total amount of graves contain garnet inlaid objects.

- The information of the other graves from the same site and region could also be used in order to study the importance of the garnet objects without relation to other grave goods. The major number of garnet objects within the database were unaccompanied by other objects. It would be interesting to compare these contexts with the grave assemblages of other graves, in order to test if the presence of a garnet adorned object communicates the gender and other social strata of a society.

- The quality of the materials used is suggested to add to the value of an object. For the majority of the objects found within the research area no analysis are present. It would be interesting the examine the metalloid compositions and compare these with the objects suggested to originate from Byzantium in order to establish if it was indeed the quality of the materials, or the visual properties that defined the value of an object.

- Within this research small geographical variations were observed. A grand study, comparing all available garnet adorned objects within an established time frame could add to the knowledge about regional preferences and styles.

- Within the same regard, the dataset and the research conducted could be improved by adding dates to the sites and contexts that are not yet available, in order to substantiate the chronological claims in regard to gender.

Abstract

Early medieval garnet inlaid objects are subject to a lot of studies, predominantly those of economies and exchange. The topic of social significance, especially in relation to gender, is however barely touched upon. This research studies the gender representation of garnet inlaid objects in Frankish-Merovingian Europe during the fifth and sixth centuries. In total 549 garnet inlaid objects were assembled from over 105 sites within the research area consisting of the Netherlands, Belgium, Luxembourg, and the German Provinces Nordrhein-Westfalen and Rhineland-Pfalz. The types of objects found within the research area mainly consist of embellishments, such as brooches, jewellery and belt fittings. This study also comprised of rarer objects such as weapons or saddle mounts. The results of the dataset are critically assessed , looking mostly at the gender theories established during the last 30 years. Also, the dataset is incorporated within a larger research frame by including the examples of Childeric and Sutton Hoo.

As a result it could be established that garnet inlaid objects are predominantly found within female graves. The amount of garnet used upon an object and the types of objects found change over time, but they remain present in female contexts throughout the period. The objects adorned with garnets that are incorporated within the male grave are usually only present within sixth century contexts. However at the end of the fifth century they are first found related to a very rich male context (e.g. Childeric). An area where garnets are predominantly present in the research area could not be discovered but some regional differences were observed. The rapid decline within garnet adorned objects found within the research area, combined with the Anglo Saxon Sotton Hoo burial is suggesting a geographical shift in the use of garnet inlaid objects.

A lot remains to be researched in new studies. The sexing of graves where the objects are found is, for instance, a worthwhile research focus. Also a thorough examination of the total grave assemblages could reveal new and exciting data.

Bibliography

-Adams , N., 2011 The Garnet Millennium: the Role of Seal Stones in Garnet Studies. In: C. Entwistle and N. Adams (eds), *Gems of Heaven: Recent Research on Engraved Gemstones in Late Antiquity c. AD 200-600.* London: British Museum Press (British Museum Research Publication Number 177).

-Ament, H. 1970, *Fränkische Adelsgräber von Flonheim in Rheinhessen*. Berlin. (Denkmäler Völkwanderungszeit B 5).

-Arrhenius, B., 1985. *Merovingian Garnet Jewellery. Emergence and social implications*. Götheborg: Graphic Systems.

-Auzina, D., G. de Groote, M. Langbroek, F. Lippok and B. van de Weerd, 2015. *Byzantine objects in the West. Their involvement in Western economics.* Leiden (unpublished Research Master Paper of Leiden University).

-Bazelmans, J., H.J.T. Weerts and M.J. van der Meulen, 2011. *Atlas van Nederland in het Holoceen: Landschap en bewoning vanaf de laatste ijstijd tot nu.* Amsterdam: Uitgeverij Bert Bakker.

-Berendsen, H.J.A., 2005a. *Landschappelijk Nederland*. Assen: Van Gorcum.

-Berendsen, H.J.A., 2005b. *Landschap in delen: overzicht van de geofactoren*. Assen: Van Gorcum.

-Berendsen H.J.A., 2008. *De vorming van het land: inleiding in de geologie en de geomorfologie.* Assen: Van Gorcum.

-Bloemers, J.H.F., W. Groeneman-van Wateringe, J.L.H. Hartmann, R.H.J. Klok, W.G. Mook, J.M. van Mourik, H.J. Steurman en P.E. Wartenberg, 1988. Ontwikkeling en bewoning van een stuifzandgebied in de Kempen. *Landschap in beweging 74,* 5-40

-Bruce-Mitford, R. L. S., 1950 The Sutton Hoo Ship-Burial. In *Nature*, Vol.165 (4192), p.339-341 https://doi-org.ezproxy.leidenuniv.nl:2443/10.1038/165339a0

-Calligaro, T., S. Colinart, J.-P. Poirot and C. Sudres, 2002. Combined external-beam PIXE and μ-Raman characterisation of garnets used in Merovingian jewellery. *Nuclear instruments and methods in Physics research B 189,* 320-327.

-Calligaro, T., 2004. The origin of ancient gemstones unveiled by PIXE, PIGE and μ-Raman spectrometry. *X-rays for archaeology,* 100-112.

-Conkey, M.W. and Spector J.D. 1984. *Archaeology and the Study of Gender* IN: Advances in Archaeological Method and Theory Vol. 7, pp. 1-38

-Drauschke, J., 2008. Zur Herkunft und Vermittlung Byzantinischer Importe der Merowingerzeit in Nordwesteuropa, in: B, Sebastian (eds.) *Zwischen Spätantike und Frühmittelalter. Archäologie des 4. bis 7. Jahrhunderts im Westen* . Berlin: de Gruyter, (Ergän-zungsbände zum Reallexikon der Germanischen Altertumskunde. Bd. 57), 367 – 423.

-Ekegren, F., 2013. Contextualizing Grave Goods, in: L. Nilsson & S. Tarlow (eds.) *The Oxford Handbook of the Archaeology of Death and Burial.* (p 174- 192)

- Engelstad, E. 2001. *Gender, Feminism, and Sexuality in Archaeological Studies* IN: International Encyclopedia of the Social & Behavioral Sciences, 6002–6006

-Farges, F., 1998. Mineralogy of the Louvres Merovingian garnet cloisonné jewellery: origins of the gems of the first kings of France. *American mineralogist 83,* 323-330.

-Fehring, G., translated by Samson, R. (2015). The Archaeology of Medieval Germany. London: Routledge.

-Geller P. L., 2009: Identity and Difference: Complicating Gender in Archaeology. *Annual Review of Anthropology 38*:65-81.

- Glazema, P. and J. Ypey, 1956. *Merovingische ambachtskunst. Het geheim van de spade, archeologie als bron van de historie.* Baarn.

-Gilg, H.A., N. Gast, T. Calligaro 2010, *Vom Karfunkelstein*, in: L. Wamser (Ed.) Karfunkelstein und Seide, Neue Schätze aus Bayerns Frühzeit, München. (Ausstellungskataloge der archäologischen Staatssammlung 37) 87–100.

-Halsall, G. 2009. *Cemeteries and Society in Merovingian Gaul. Selected Studies in History and Archaeology, 1992-2009,* Leiden: Brill Publishing

-Halsall , G. 2014. Two Worlds Become One: A 'Counter-Intuitive' View of the Roman Empire and 'Germanic' Migration*. German History,* Volume 32, Issue 4, Pages 515–532, https://doi.org/10.1093/gerhis/ghu107

-Haperen, van, M. C., 2013. The distributed dead: Personhood from the perspective of reopened graves. In: B. Ludowici (ed), I*ndividual and Individuality? Approaches towards an Archaeology of personhood in the First Millennium AD*. Hannover: Niedersächsischen Landesmuseum (= Neue Studien zur Sachsenforschung Band 4).

-Härke H., 2001 Cemeteries as places of power , in M. de Jong and F. Theuws (eds.), *Topographies of power in the early Middle Ages*. Leiden; Boston; Köln: Brill (The transformation of the Roman world; Vol.6), 9-30.

-Härke, H. 2011. Gender representation in early medieval burials: ritual re-affirmation of a blurred boundary*? In: S. Brookes, S. Harrington und A. Reynolds (Hrsg.). Studies in Early Anglo-Saxon Art and Archaeology: Papers in Honour of Martin G. Welch.* Oxford: Archaeopress. (British Archaeological Reports 527). 98-105.

-Härke, H., 2014. Grave goods in early medieval burials: messages and meanings, *Mortality: Promoting the interdisciplinary study of death and dying*, 19:1, 41-60. http://dx.doi.org/10.1080/13576275.2013.870544

-Härke, H., 2016. Migrations and state formation in the Early Middle Ages: a view from the west. In: T. Jackson (ed.), *The earliest states of Eastern Europe. Old Rus' and Medieval Europe: The Origin of States.* Moscow: Dmitriy Pozharskiy University. 116-130.

-Hedeager, L., 2000. Migration Period Europe: the formation of a political mentality, in F. Theuw & J. Nelson (eds), *Rituals of power. From Late Antiquity to the Early Middle Ages*, Leiden/Boston/Köln. (Transformation of the Roman World 8), 15-57.

-Hedeager, L., 2008. Scandinavia before the Viking Age, in S. Brink and N. Price (eds), *The Viking World.* Abbington, Oxon (OX): Routledge, 11-24.

-Hedeager, L., 2011. *Iron age myth and materiality: an archaeology of Scandinavia AD 400-1000.* Abbington, Oxon (OX): Routledge.

-Hedenstierna-Jonson C, A. Kjellström, T. Zachrisson, M. Krzewinska, V. Sobrado, N. Price, T. Günter, M. Jakobsson, A. Götherström and J. Stora 2017. A female Viking warrior confirmed by genomics. *American Journal of Physical Anthropolgy*. 164: 853 – 860. https://doi.org/10.1002/ajpa.23308

-Heeren, S. & L. van der Feijst 2017, *Prehistorische, Romijnse en middeleeuwse fibulae uit de Lage Landen. Beschrijving, analyse en interpretatie vna een archeologische vondstcategorie*, Amersfoort: Spa Uitgevers.

-Heeren, S. and T. Hazenberg (eds) 2010, *Voorname dames, stoere soldaten en eenvoudige lieden. Begravingen en nederzettingssporen uit het Neolithicum. De laat-Romeinse tijd en Middeleeuwen te Wijchen-Centrum*, Leiden: Hazenberg Archeologie (Hazenberg Archeologische Serie 1)

-Hamerow, H. 2017, The Circulation of Garnets in the North Sea Zone, ca 400-700. In A. Hilgner, S. Greiff , D. Quast (eds) *Gemstones in the First Millennium AD. Mines, Trade, Workshops and Symbolism. International conference, October 20th-22nd, 2015.* Mainz: RGZM, (RGZM Tagungen Band 30), 71-84.

-Hodges, R. 2012. *Dark age economics. a New audit.* London: Bristol Classical press

-James, E. 1992. Royal Burials among the Franks. In: M.O.H. Carver (ed), *The age of Sutton Hoo : the seventh century in north-western Europe.* Suffolk : The Boydell Press. 243-255

-Kars, M., 2011. *A cultural perspective on Merovingian burial chronology and the grave goods from the Vrijthof and Pandhof cemeteries in Maastricht.* UvA Dissertation.

-Kars, M. 2012. *(*Re)considering the pre-burial life of grave goods: towards a renewed debate on early medieval burial chronology on the continent. *Medieval and Modern Matters* 3, 107-34.

-Knol, E., 1993. *De noordnederlandse kustgebieden in de vroege middeleeuwen*. Dissertatie Vrije Universiteit Amsterdam.

-Krippner, A., G. Meinhold, A.C. Morton and H. von Eynatten, 2014. Evaluation of garnet discrimination diagrams using geochemical data from garnets derived from various host rocks. *Sedimentary geology 306,* 36-52.

-La Baume, P., B. Bauermeister und J. Frechen 1967. *Das fränkische Gräberfeld von Junkersdorf bei Köln.* Berlin : Gebrüder Mann (Germanische Denkmäler der Völkerwanderungszeit, Serie B Bd. 3)

-Larios, B.M. and J. Pusch, 2014. Following the garnet's trail: from South India to Europe. *Massala 9 (4),* 11-17.

- Loveluck, C. 2013. *Northwest Europe in the Early Middle Ages, c.AD 600-1150: A Comparative Archaeology.* Cambridge: Cambridge University Press.

- Ljungkvist, L., J. Sarén Lundahl and P. Frölund 2017. Two Workshops with Garnet Crafts in Gamla Uppsala. in A. Hilgner, S. Greiff , D. Quast (eds) *Gemstones in the First Millennium AD. Mines, Trade, Workshops and Symbolism. International conference, October 20th-22nd, 2015.* Mainz: RGZM, (RGZM Tagungen Band 30), 91-102.

-Lyman, R.L. 1994. *Vertebrate Taphonomy*. Cambridge (UK): Cambridge University Press

-Mathis, F., O. Vrielynck, K. Laclavetine, G. Chêne and D. Strivay, 2008. Study of the provenance of Belgian Merovingian Garnets by PIXE at IPNAS cyclotron. *Nuclear instruments and methods in Physics research B 266,* 2348-2352.

-Mauss, M., 1990. *The gift : the form and reason for exchange in archaic societies*. Abbington, Oxon (OX): Routledge.

-Moral, E., 2016*:* Qu(e)erying Sex and Gender in Archaeology: a Critique of the "Third" and Other Sexual Categories. *Archaeol Method Theory* (23). 788–809. DOI 10.1007/s10816-016-9294-y

-Nicolay, J. A. W., 2014. *The splendour of power. Early medieval kingship and the use of gold and silver in the southern North Sea area (5th to 7th century AD)*. Groningen: Barkhuis Publishing and University of Groningen Library (= Groningen Archaeological Studies 28).

-Nijboer, A. J., & van Reekum, J. E. (1999). Scientific analysis of the gold disc-on-bow brooch. In J. C. Besteman, J. M. Bos, D. A. Gerrets, H. A. Heidinga, & J. de Koning (editors), *The excavations atWijnaldum: reports on Frisia in Roman and Medieval Times* (Vol. 1, blz. 203 - 216). Rotterdam/Brookfield:A.A. Balkema Publishers. http://hdl.handle.net/11370/cc26ed5f-349f-41cb-a1ba-7008cd6c13f7

-Olsen V. S., 2006 The development of disc-on-bow brooches in: P.A.J. Attema, J.N. Lanting, M.A. Los-Weijns, N.D. Maring-Van der Pers, A.J. Nijboer (eds.) *Palaeohistoria* 47/48 (2005/2006), 479–528. Groningen: Barkhuis Publishing.

-Pirling, R., 1966. *Das römisch-fränkische Gräberfeld von Krefeld-Gellep*. Berlin.

-Pirling, R., 1974. *Das römisch-fränkische Gräberfeld von Krefeld-Gellep: 1960-1963*. Berlin.

- Pirling, R., 1979. *Das römisch-fränkische Gräberfeld von Krefeld-Gellep: 1964-1965*. Berlin.

-Pirling, R., M. Siepen and C. Reichmann, 2006. *Die Funde aus den römischen Gräbern von Krefeld-Gellep: Katalog der Gräber 6348-6361*. Stuttgart

-Périn P., T. Calligaro, F. Vallet, J-P. Poirot & D. Bagault, 2006. Provenancing Merovingian garnets by PIXE and μ-Raman spectrometry. In: J. Henning (eds) *Post-Roman Towns, Trade and Settlement in Europe and Byzantium Vol. 1 The Heirs of the Roman West.* Berlin: Walter de Gruyter. (Millennium Studies in the culture and history of the first millennium C.E. Volume 5/1). 69-76

-Price, N., 2008. Dying and the dead: Viking Age mortuary behaviour, in S. Brink and N. Price (eds), *The Viking World.* Abbington, Oxon (OX): Routledge, 257-273.

-Quast, D. 2012. The Allamanni and Byzantium from the 5th to the 7th century, in V. Ivanisevic and M. Kazanski (eds), *The Pontic-Danubian Realm in the Period of the Great Migration.* Paris: College de France, ACHCByz (Monographies 36), 317-335.

-Quast, D. (Hrsg.) 2015. *Das Grab des fränkischen Königs Childerich in Tournai und die Anastasis Childerici von Jean-Jacques Chifflet aus dem Jahre 1655*. Mainz: Verlag des Römisch-Germanischen Zentralmuseums (Monographien des Römisch-Germanischen Zentralmuseums Band 129)

-Quast, D. and U. Schüssler, 2000. Mineralogische Untersuchungen zur Herkunft der Granate merowingerzeilicher cloisonnéarbeiten. *Germania 78 (1),* 75-96.

-Roosens, H. 1979. Die Datierung des Grabes X von Arlon, Conspectus MCMLXXVIII, *Archaeologia Belgica,* 213, Brussel

-Roth, H. 1979 (ed), *Kunst der Völkerwanderungszeit*. Oldenburg: Propyläen Verlag. (Propyläen Kunstgeschichte, Supplementband IV)

-Siegmund, F., 1998. *Merowingerzeit am Niederrhein. Die frühmittelalterlichen Funde aus dem Regierungsbezirk Düsseldorf und dem Kreis Heinsberg*, Köln: Rheinland-Verlag GmbH.

-Šmit, Ž., H. Fajfar, M. Jeršek, T. Knific, J. Lux, 2014. Analysis of garnets from the archaeological sites in Slovenia. *Nuclear instruments and methods in Physics research B 328, 89-94.*

-Sofaer, J. & M.L.S. Sorensen 2013. Death and Gender in: L. Nilsson & S. Tarlow (eds.) *The Oxford Handbook of the Archaeology of Death and Burial* (p 528 – 538) .

-Sorg, M., 2011. Byzanz als Drehscheibe des merowingerzeitlichen Handels zwischen Ost und West: Das beispiel Granats, in B.J. Nemes and A. Rabus. *Vermitteln, Übersetzen, Begegnen: Transferphänomene in Europäische Mittelalter und in der Frühen Neuzeit: Interdisciplinäre Annäherungen.* Göttingen: V&R unipress, 137-168.

-Stoepker, H. 2007. *Evaluatie en synthese van het sinds 1995 in Limburg uitgevoerde archeologische onderzoek met betrekking tot de Middeleeuwen en Nieuwe Tijd.* https://www.limburg.nl/publish/pages/1061/kec_ce_middeleeuwen.pdf

-Stoepker, H. (Ed.), 1988. *Archeologische kroniek van Limburg over 1987*. ROB druk 356

- Thoresen, L., 2017. Archaeogemmology and Ancient Literary Sources on Gems and their Origins, in A. Hilgner, S. Greiff , D. Quast (eds) *Gemstones in the First Millennium AD. Mines, Trade, Workshops and Symbolism. International conference, October 20th-22nd, 2015.* Mainz: RGZM, (RGZM Tagungen Band 30), 155-217.

- Theuws, F., 2000. Introduction. Rituals in transforming societies, in F. Theuw & J. Nelson (eds), *Rituals of power. From Late Antiquity to the Early Middle Ages*, Leiden/Boston/Köln (Transformation of the Roman World 8), 1-13.

- Theuws, F., 2009. Grave goods, ethnicity, and the rhetoric of burial rites in Late Antique Northern Gaul, in Derks, T. & N. Roymans (eds) *Ethnic Constructs in Antiquity: the role of power and tradition.* Amsterdam University Press. 283-319

- Theuws, F. and M. Alkemade, 2000: A kind of mirror for men. Sword depositions in Late Antique northern Gaul, in F. Theuws & J. Nelson (eds), *Rituals of power. From Late Antiquity to the Early Middle Ages*, Leiden/Boston/Köln (Transformation of the Roman World 8), 401-476

- Theuws, F. and M. van Haperen (ed.) 2012. *The Merovingian cemetery of Bergeijk-Fazantlaan*. Bonn: Habelt. (Merovingian Archaeology in the Low Countries 1).

- Trigger, B.G. 2006*. A history of Archaeological Thought second edition.* Cambridge: Cambridge University *Press. 444-483.*

-Vanderhoeven, M. 1977. *Een Merovingisch grafveld te Engelmanshoven.* Brussel: Nationale dienst voor opgravingen

-Vielitz, K. 2003. *Die Granatscheibenfibeln der Merowingerzeit*. Montagnac: Editions Monique Mergoil (Europe mëdiëvale, 3).

-Voss B.L. (2000) Feminisms, queer theories, and the archaeological study of past sexualities. *World Archaeology Vol. 32(2): 180-192 Queer Archaeologies 2000 Taylor & Francis Ltd*

-Waters, M.R., 1992. *Principles of geoarchaeology: a North American perspective.* Tucson: University of Arizona press, 120-122.

-White T.D. and P.A. Folkens (2005) *The human bone manual*. USA*:* Elsevier Academic Press

Websites

https://zellwerk.hypotheses.org/1#more-1 15-7-2018

Figures

Tables