

TANGIBLE TRACES OF DEVOTION

The Post-mortem Life of Relics

Anna Kjellström

Though relics have attracted immense interest from a variety of scholars, not much attention has been paid to the practical handling of the holy corporal remains. Here, with the aim of better understanding the treatment of the bodies and relics as physical objects in Sweden during the Middle Ages, osseous materials from three different contexts were osteologically analysed. The investigation offers detailed insight into the treatment of the bones and makes it possible to distinguish three physical phases of the cult of relics. The three phases demonstrate the utilitarian administration of the bones and the fortitude of belief.

Keywords: relics, saints, mos teutonicus, Sweden, sharp force trauma

Osteoarchaeological Research Laboratory,
Department of Archaeology and Classical Studies,
Stockholm University
106 91 Stockholm, Sweden
anna.kjellstrom@ofl.su.se

INTRODUCTION

In recent years the body has been in focus in many disciplines in both the social sciences and the humanities (e.g. Joyce 2005, for a review of the literature). Research has demonstrated the close relationship between the physical body and cultural identity. The body is seen as a cultural system shaped by different processes of normalization and discipline, both by the individual and by society. Within archaeology it is primarily the handling of the dead body that has been of interest. Cadavers that have been transferred within or outside the contemporary burial tradition offer insight into central social values. Body parts outside the grave may have a long post-mortem lifecycle and, with their often supernatural powers, they form parts of several complex narratives.

Relics have been related to both a traditional descriptive and a perceptual perspective. Like other material objects, relics are palpable things which can evoke memories and function as agents for consensus regarding specific events or people from the past. Although no single definition can be applied, a relic can be described as a mobile object associated with a specific person, either the corporal remains of the person (hair, blood, foreskin, breast milk, bone or teeth) or something that can be closely related to a mythological narrative of the person (Walsham 2010). Furthermore, the power of the relic may be transferred to the container or other objects in contact with the relic (hence called *contact relics*). As opposed to other entities, a relic possesses the power not only to protect and save the believer but also to function as an agent for human response. It is not a magical amulet or a symbol of someone or something, it *is* the person (Brown, P. 1981:11). As Walsham puts it, ‘each particle encapsulating the essence of the departed person, *pars pro toto*, in its entirety’ (Walsham 2010:12; see also Montgomery 2009:59). This also means that even the tiniest relic represented a complete body.

In a European context the history of relics (Brown, P. 1981; Bentley 1985; Fröjmark 1992; Montgomery 2009), the significant experience of the cult (Leipe 2015; Immonen & Taavitsainen 2011), and circulation and thefts (Geary 1986, 1990), have been dealt with. Additionally, with regards to osseous relics, attempts have been made to verify the authenticity of holy bones and the associated individual (Bygdén *et al.* 1954; Fulcheri 1996; Van Strydonck *et al.* 2009; Nilsson *et al.* 2010; Petaros *et al.* 2011; Immonen & Taavitsainen 2011; Sten *et al.* 2016). Furthermore, Fulcheri (1996) demonstrated the advantages of a multidisciplinary approach in studying the palaeopathology of relics. In 2011, based on the assumption that the relics were authentic, Petaros and colleagues investigated remains of saints and acknowledged ‘the need to establish

a database of relics' due to the often detailed biographies of historical figures and hence constructive possibilities for palaeopathological research (Petaros *et al.* 2011:28).

Possibly due to the comparatively late date of Christianization and the Reformation in Scandinavia, few relics exist and few synthesizing studies of relics have been made with a local perspective. Attention has been aimed at hagiographic issues of Swedish saints (e.g. Bildt 1893; Lundén 1973; Martling 2001), and descriptive studies of the physical remains of reliquaries (e.g. Fürst 1918; Bygdén *et al.* 1954; Nilsson *et al.* 2010; Sten *et al.* 2016). Modern investigations of prestigious osseous relics, including use of state-of-the-art techniques, gain attention from scholars in a variety of fields and a prodigious interest from the public. The reason for this attention most likely has to do with the complex nature of relics in general and historical corporal remains in particular. As with all religious objects, relics carry layers of information which, in association with their context, serve as sources not only for basic data about their physical properties, but also as communicators of a socio-cultural narrative.

Despite the massive interest in relics, not much attention has been paid to the practical handling the holy bodies were subjected to in association with the translation, or to the sometimes 'tough love' the remains were exposed to after this. Using an osteological perspective, in the following discussion the focus will be on the transformation the relic underwent during the 11th–16th centuries, from a complete, revered, but still profane body, to venerated corporal remains in a reliquary in the region today known as Sweden. How did the body *become* a relic and how was it handled during its most active years? Though a relic can constitute almost any type of human tissue or personal item, here only osseous remains will be considered.

SAINTS AND RELICS: A BRIEF BACKGROUND

In the Roman Empire, the first Christian martyrs, some of whom became saints, were venerated with small shrines erected at their tombs in cemeteries outside cities or where the martyrs had been executed (Brown, P. 1981:4; Head 1999). These holy persons had been persecuted, often suffered gruesome deaths, and by their virtuous life they continued to serve as examples for the growing Christian community. A person could not become a saint in isolation but needed to be accepted by other Christians as embodying holy properties. As early as the mid-second century the first hagiography was written and the first relics were documented. By the

4th century the celebration of martyrs and saints had attracted general recognition and acceptance. During the same period, the persecutions of Christians ceased and the focus of reverence was henceforth aimed at devout Christians who had renounced the world (e.g. hermits or monks) or who had lived especially righteous lives (e.g. bishops and virgins). The tomb of a saint was made public to the community and could, according to the historian Peter Brown, be considered as 'non-graves' (Brown, P. 1981:9). The handling of relics was a part of the alterations of both the sacral and the topographical landscape, since the physical remains were kept close to the living community in contrast to Roman practice (Brown, P. 1981:9). Relics became an important part in the narrative of the embodiment of holiness (Head 1999). Even though the cult varied throughout Europe, the celebration of martyrs and the recognition of saints were controlled by the ecclesiastical authorities. Generally, after the recognition of a holy person by a bishop or the pope, the remains were elevated and translated (moved to an altar or reliquary). However, not all individuals perceived as saints were formally canonized and there were many saints that were venerated only on a local or regional level. The demand for relics increased in the 8th century during the Carolingian expansion in north-eastern Europe and the general extension of the Christian world. The cult gradually became more formalized, and at the second Council of Nicaea in 787, the deposition of relics became mandatory for an altar to be consecrated (Bynum & Gerson 1997). Tomb and altar joined in a way that would have been impossible for previous religions in the old Roman world. Few devout men and women became saints immediately after their death during the first centuries. This changed in the High Middle Ages when more contemporary persons became recognized (Head 1999). The saints were present in most areas of everyday life. Their feasts marked the turning of the calendar year, every church was consecrated to at least one saint and major cities had their particular patron saint. Particularly in urban centres but also in rural areas, secular men and women as well as clergy came together in religious confraternities or guilds dedicated to particular saints.

The ritual of how altars (and by extension churches) were consecrated is described from the 8th century and well established from 960 (Karls-son 2015:48, 67). The Roman Catholic Church established at the fourth Lateran Council of 1215 that the altar sacraments (the wine and bread) were transubstantiated into the blood and body of Christ (Mackendrick 2010). Not until the late 12th and early 13th centuries was a formal canonization by the pope required for a holy person to be considered a saint (Bynum & Gerson 1997). (However, since the word *saint* is complex it is here used in its broadest sense, denoting both canonized individuals and

people who were recognized as saints by the surrounding community). Though the clerical community was both the transmitters and the main receivers of relics, the cult of saints was quintessentially public and to a certain degree dependent on large crowds (Abou-El-Haj 1991). During troubled times, relics could be brought from shrines elsewhere and put on display (Abou-El-Haj 1991). The relics played important roles in the feast days of the saints and other central holidays; they were carried in processions and war expeditions, and thus were part of everyday life. The discovery and trade of new relics could be organized but also random. Similarly to other exclusive objects, relics constituted a significant part in networks of trade, theft or other types of exchange, and were used to draw attention rendering a Christian institution both prestige and power (Bentley 1985; Geary 1986). The circulation of holy objects was associated with the strength of alliances and relationships within the laity, and between the laity and the Church, with the power of consolidating territories and the prevailing hegemony. The Reformation marks the end for most of the cults of saints and relics in northern Europe but the practice continues in Catholic areas (as well as in Orthodox regions). In the 17th-century political discourse, relics functioned as weapons of propaganda for Catholics and Protestants alike. The latter group considered relics as idolatry, which led to the destruction, or at least removal, of most remaining relics in churches and cathedrals in northern Europe.

The cult of saints and their relics in medieval Sweden

In medieval Sweden, as in other Catholic countries, the cult of saints and relics was central. Although the cult declined with the Lutheran Reformation in 1527 the practice of worshipping saints was not banned until 1544 (Thordeman *et al.* 1951:3). Relics of national saints were collected locally. Imported relics reached Scandinavia in different ways, commonly through international exchanges between kings or clergy and the papacy but possibly also through pilgrimage (Collijn 1919; Andersson 1983:94; Karlsson 2015:120, 135). Some saints were more commonly represented than others, and there seems to have existed a hierarchy where martyrs were preferred to confessors, and (except for the Virgin Mary) male saints before female (Karlsson 2015:123). This order can also be associated with the status of particular churches and even altars. The authenticity of holy objects was confirmed and established through accompanying notes in the reliquary (*authenticae*), inaugural writing on the church wall or other documents stating and verifying the name of the saint (Karlsson 2015:120).

All churches were inaugurated by a bishop and (most likely) the insertion of a relic in the altar completed the consecration. Three grains

of incense could also be placed along with the relic (Leipe 2015). The grains are considered by some researchers to represent the treatment of the complete body (Thordeman *et al.* 1951:15). Most churches had one or two relics in their altars while large churches or cathedrals could hold up to a hundred at different altars within the building. For instance, the Cathedral in Lund (in medieval Denmark) is known to have housed relics from at least 417 named saints (Thordeman *et al.* 1951:17). The maintenance and storage of the revered artefacts varied. In a recent thesis dealing with altars from the diocese of Lund, information has been compiled regarding the appearance and size of the altar chamber (*sepulchrum*) where the relics were located (Karlsson 2015). In most cases the chamber is square or oblong and located in the altar slab (*mensa*). The size varies but the majority have lengths of <100 mm (a range of 40–200 mm) and a depth of only a few centimetres (the maximum dimension is 50 mm) (Karlsson 2015:75–76). In the chamber a box (most often of lead but also of other metals or wood) was placed containing the relics. The lead containers were cut from sheet lead, usually 40–60 mm in length and with a height of 20 mm (Karlsson 2015:112). Karlsson believes that they probably were manufactured on site and adapted to the relics at hand (2015:112). Furthermore, there is a weak correlation between the size of the chamber and the number of relics.

Besides at the altar, the relics were kept in reliquaries, some lavishly decorated. Most were later confiscated and destroyed in connection with the Reformation. The reliquaries underwent several changes which may reflect the different stages of the cult. During the 11th century, when the first relics reached Scandinavia, they were hidden in portable boxes. In a later phase the relics were made visible to worshipers through a piece of glass or a pierced screen in the container. This was apparently important since peepholes could be made even in old reliquaries (Thordeman *et al.* 1951:9). In the 14th century the relics were more often put inside sculptures of the saint and in the 16th century the relic could, somewhat irreverently, be incorporated as building material in statuettes. This demonstrates the strong relationship between the image or sculpture and the holy bone, where the former became the new complete body of the latter (Belting 1994:299).

THE POWER OF A RELIC

The outlined history of the cult of saints and their relics calls for an elucidation of the agency and power of the holy objects. Through their pious life, the saints immediately after death were close to Christ's heavenly

throne and could act as intercessors of the living before God. This is in contrast to ordinary people who went through a post-liminal phase in anticipation of purgatory and heaven. The saint or martyr's transcendence and status change made any physical material (the body as well as clothes and other things) loaded with the holy power of a complete body. This means that the saints were venerated (but not worshiped in the same way as Christ). The saint proved his or her legitimacy, often in the form of visions or through divine interventions. These interventions and the power to do miracles strengthened the authenticity of the holy body, now a relic. There existed a reciprocal relationship in the form of veneration in exchange for protection, between the Christian community and the relics (i.e. the saint) (Geary 1986). The relics manifested the sacred, and in spite of being physical objects they became something else (i.e. *hierophany* – a physical manifestation of the sacred) due to the association with the divine. The sensory experience was of great importance, and using a phenomenological perspective Immonen and Taavitsainen (2011) have discussed how a relic acted as a bond between the profane and the sacred. The approach to a relic is also a convergence with *the other*, where the secular body is vulnerable and attached to the room while in contact with the divine (Immonen & Taavitsainen 2011). There is a strong sensuality in meeting with the relic, where one's touch can convey a sense of being touched. The tactile practice, together with that of sounds, smells and sights, was a part of the holistic religious experience. The devoutness (or attempts at theft) among worshipers could sometimes take extreme forms, and cases are known where devotees tried 'to carry away bits of relics in their mouths' (Bynum & Gerson 1997). The value and strength of the relic was connected to the strength of the saint's relationship with God before and after death; that the objects were coveted; and that it had a convincing association to a specific saint (Geary 1986). The aspect of authenticity was a question of belief and response from the object. Again, the reciprocal interconnection between the relic and the worshipers could be seen as a self-supporting system, where for example a public procession strengthened the legitimacy and hence the power of the holy object. The question of whether a relic is 'real' and *de facto* comes from a specific individual or not is much likely anachronistic (Walsham 2010; Immonen & Taavitsainen 2011). The multiple occurrence of the same body part at different institutions need not have been a problem if seen from the perspective of bilocation. A saint had the ability to be present at different locations at the same time. Additionally, as put by Mackendrik 'wholeness means not reunification but multiplication' (2010:106). However, this is not to say that authenticity was not an issue. The legitimacy of some cor-

poreal remains was debated and tested already during medieval times (Freeman 2011:118–119). Additionally, the treatment of the corporeal remains of a saint could be rather harsh when people tried to confirm the authenticity. For instance, during the translation in 1104, when the body of St Cuthbert (dead in 687) was being examined, the head of the saint was shaken and an ear was pinched to demonstrate that the body had remained incorrupt and hence was blessed (Abou-El-Haj 1991). Every move of a relic was a risk since it broke away from its original context and new miracles were needed to keep, or regain, its status. The power of the relic could also be demonstrated in the ability to strike at potential thieves (Abou-El-Haj 1991). If a response to the prayers failed to appear the saint could be punished and humiliated in that the relics were placed on the church floor (Geary 1983, 1990:21; Head 1999). Altogether this shows that the relics constituted an important driving force and that the physical remains went through several processes, changing their status and agency.

THREE SWEDISH SAMPLES

With the aim of better understanding the treatment of holy bodies and relics as physical objects, osseous materials from three different contexts will be described. The materials were ocularly examined by the author on three separate occasions in 2002 (Nilsson *et al.* 2010), in 2014 (Sten *et al.* 2016) and 2015 (an analysis conducted at the Swedish History Museum). The contexts differ in character since most of the remaining Swedish relics seem to have survived by chance, either because they were forgotten or because they were perceived as remains of saints of great national interest such as Saint Birgitta or Saint Erik.

The remains in the reliquary of Saint Birgitta

Vadstena Abbey, in the Diocese of Linköping, was founded in 1346 by Birgitta Birgersdotter (Saint Birgitta). In 1373 she died in Rome. Her excarnated remains were buried in Vadstena in 1374 but were exhumed after her canonization in 1391 and the bones were translated to the church of the abbey. The remains of the daughter of Saint Birgitta, Saint Catherine, were translated in 1489 and some of her remains were placed in the shrine that previously belonged to her mother (Fritz & Elfving 2004:19). At a later stage, relics from mother and daughter are believed to have been kept in the same reliquary (Bygdén *et al.* 1954:91). No written records exist of translations of other holy individuals in Vadstena but it is clear that the abbey was in possession of relics from other saints.

The contents of the shrine that holds the remains of Saint Birgitta (and possibly five other named saints) have been investigated thoroughly on two occasions; in 1917 by Carl Magnus Fürst and in the early 1950s by a group of anthropologists led by Carl Herman Hjortsjö (Bygdén *et al.* 1954; Andersson 1983). In 2002 a minor analysis, focused on two calvaria, was made by two geneticists and the author (Nilsson *et al.* 2010). Here the descriptions from the 1950s investigation will be summed up together with observations made by the author in 2002.

The shrine contains 25 bone elements which all have been treated as relics (two crania, one mandible, six humeri, one radius, one ulna, two innominate bones, five femora, six tibiae and one fibula). The two crania have been suggested to come from Saint Birgitta and Saint Cathrine (Bygdén *et al.* 1954), but this was later disproved by the application of radiocarbon dating and an ancient DNA analysis (Nilsson *et al.* 2010). Based on the morphology and osteological parameters it was estimated that the osseous material originates from 13 to 15 adult individuals (seven to nine men and six women) (Bygdén *et al.* 1954:30). Several of the bones bear marks of post-mortem treatment. One humerus has the (possibly medieval) text '*de Sto Sigfrido*' written in ink on the diaphysis. Six of the bones exhibit scrape marks along the shafts; five bones exhibit sharp force trauma or artificially made breakage (i.e. according to the investigators it cannot be explained by decomposition processes); six bones have a polished surface most likely due to touching from human hands (Bygdén *et al.* 1954:14–30). Furthermore, the light colour of several of the bones is taken as an indication that some of the individuals never were interred or at least were not buried for a long period. In the investigation in 2002 of the calvaria believed to have belonged to Saint Birgitta, the white-grey colour and the astonishing polished character of the ectocranial surface was noted. The irregular breaks of the calvaria exhibited the same staining and colour as other surfaces. On the left parietal, signs of mechanical bone removal were observed. The posterior section of the bone exhibit edged tool marks which have created right-angled damage with a clear-cut smooth surface. The lesion fulfils all characteristics of sharp force trauma (Wenham 1989; Kimmerle & Baraybar 2008; Crowder *et al.* 2013). A similar sharp force trauma was documented on the left side of the frontal bone which removed the zygomatic process. It was not possible at the time of the investigation (which took place in the church), to classify the sharp force trauma as either perimortem (i.e. to viable bone) or post-mortem (i.e. to dry bone). This is much likely because the broken fractures were exposed to the same environment as the rest of the bones for hundreds of years. Hence it was not possible to deduce when the bone removal took place.

The Remains in the Reliquary of Saint Erik

Uppsala Cathedral holds the shrine of Saint Erik containing both the crown and the alleged remains of King Erik (IX) Jedvardsson. According to the legend of Erik (Sw. *Erikslegenden*) he was slain after mass on 18 May 1160 (Aili 1990). The king was buried in Old Uppsala. Though not formally canonized he was considered a saint from the end of the 12th century and was translated in 1257. The content of the reliquary was investigated in 1946 (Thordeman 1954), and a second time in 2014 when an osteological investigation, together with DNA and isotope analyses, was performed on the bones (Sten *et al.* 2016).

The results from 2014 showed that 23 of the 24 bone elements in the reliquary come from an adult male individual. Excluding bones in the hands and feet, the cranium, trunk and both extremities were repre-



Figure 1. Parallel post-mortem marks on the varnished surface of the femur from Saint Erik. Photo: Anna Kjellström.

sented among the elements. Except for one or possibly two ante-mortem injuries showing signs of healing, nine or ten perimortem sharp force traumas, occurring at or near the time of death, were identified. The wounds fulfil the criteria for perimortem sharp force trauma. They exhibit no signs of healing and the fractures are smooth with the same colour as the rest of the bone. Apart from a cervical vertebra with a bisecting cut, only one of the wounds was severe enough to cause a loss of bone. Since these lesions are more consistent with battle wounds than intentional removal of segments after death, they have been interpreted as part of the event that led to the death of the individual (Sten *et al.* 2016). Nevertheless, as in the case of the bones in the reliquary of Saint Birgitta alterations from post-mortem handling which may be related to preservation practices are also detectable. Dark brown superficial incisions on the long bones were interpreted as ‘scaper skips’ (i.e. transverse marks due to defleshing) (Ingelmark 1954:239). This interpretation is not entirely satisfactory since no scrape marks in the direction of the scraping, along the shafts, are identified. The parallel, regular marks are nevertheless assumed to be related to management of the elements after death (Figure 1). A chemical analysis of the bone surface in 1946 resulted in the identification of albumin (Ingelmark 1954). In the Middle Ages albumin acted as a binder in paint and it was most likely used as varnish coating to conserve the bones.

Relics at the Swedish History Museum

The Swedish History Museum (SHM) in Stockholm holds various medieval reliquaries. Although several contain osseous remains, most of the bones were too fragmented (< 10 mm) to be included in the present analysis; only three inventory numbers had relics of relevant size and could be examined by the author.

Item 970703, SHM 349: Eight bone fragments from the Vadstena convent, Östergötland. The fragmented elements were most likely the content of one of three textile reliquaries with the same SHM number. The collection included: a left parietal bone, an occipital bone (external eminence), a frontal bone, right mandible (the coracoid process), three neurocranial fragments and a rib. None of the elements were complete and all were human except for the rib which comes from a ruminant (goat or sheep). A sex assessment could only be performed on the occipital bone that showed male characteristics (Buikstra & Ubelaker 1994:20). The human remains exhibit varied surface colours and dry jagged fractures without indications of handling or intentional breakage.

Item 41351, SHM 6: A bone in an arm reliquary in silver which is a part of the ‘Linköping treasure’, Linköping, Östergötland. The ele-

ment is the proximal joint and diaphysis of a humerus from the right side. The measurements of the joint (vertical diameter 58.8 mm and transverse diameter 44.8 mm) indicate that the bone comes from a man (Dwight's method presented in Bass 1987:152). The diaphysis exhib-

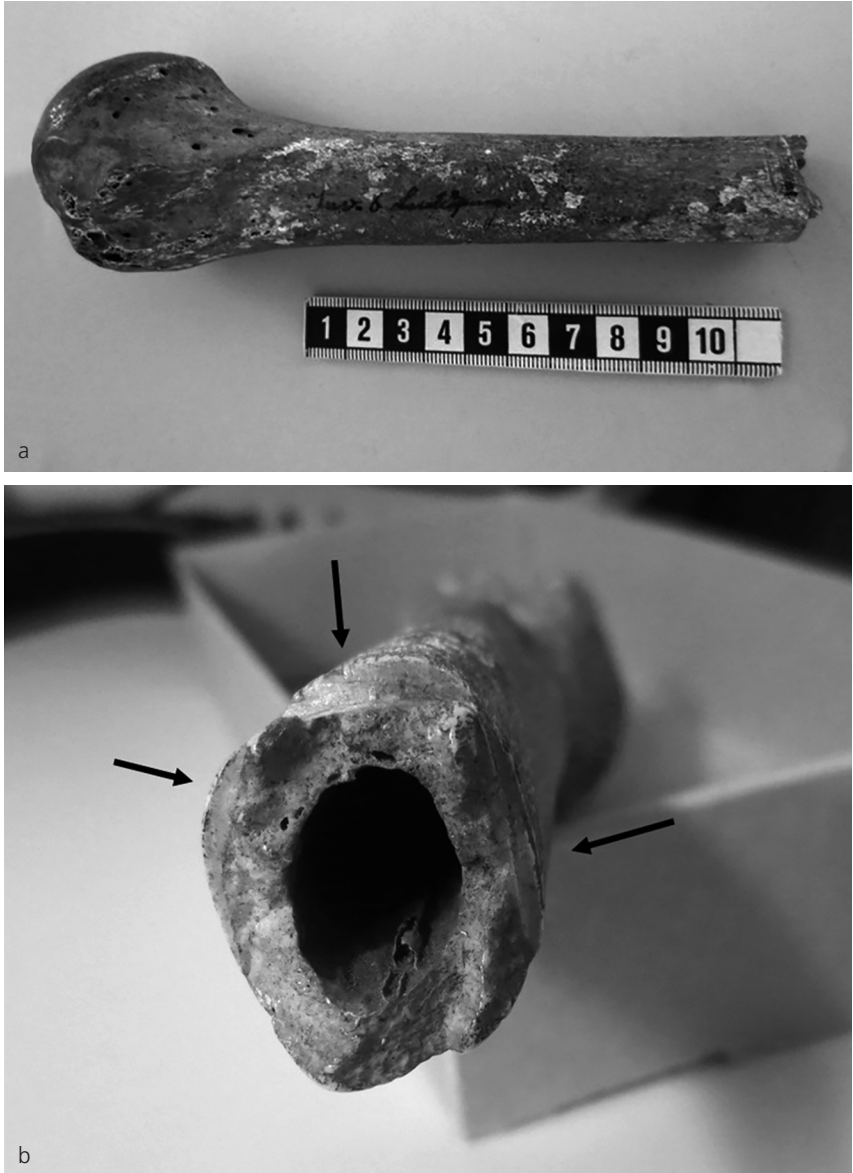


Figure 2. a) Humerus 41351 (SHM 6) from the 'Linköping treasure'. b) Detail of the diaphysis with signs of sharp force trauma on three different sides and post-mortem breaks (Photo: Anna. Kjellström).

its several horizontal linear marks near the distal end of the segment. On the ventral side there are three superficial parallel incisions (9–15 mm) and distally of these a fourth incision (16 mm) has cut deeper into the cortex but left a breakaway spur. On the dorsal side a superficial incision (4 mm) was documented together with a deeper cut (15 mm in length) and a breakaway spur. Finally, on the lateral side a similar deeper incision (11 mm in length) was observed showing traces of the tool (horizontal *striae*) on the cut surface. None of the cuts are deep enough to affect the marrow (Figure 2). The lesions fulfil the criteria for sharp force trauma (Wenham 1989; Kimmerle & Baraybar 2008; Crowder *et al.* 2013), and the lighter colour of the cuts' surfaces indicates that they were made post-mortem.

Item 43540. SHM 19868: Three bone fragments from a lead container of unknown provenance. Two of the fragments are parts of the neurocranium from an adult individual and one fragment is unidentified. The fragments have varied colours and show dry irregular damage without indications of post-mortem handling.

THE CONCEPTUAL SHIFTS OF THE HOLY BODY

The relic discourse together with the osteological investigation conveys that the post-mortem life of holy bodies and the subsequent relics underwent conceptual shifts that could be described in three major phases. During these phases, where the physical remains evolve in significance, it is evident that both intentional and unintentional forces are at work creating new meanings and new agencies for the sacred objects.

Phase one: the transition of saints and the practice of *mos teutonicus* of nobles

The first phase relates to becoming holy. This is the period before the relics were formally presented to the Christian community; the gathering of the remains from a grave, and the treatment which facilitated preservation. There were strong social and cultural regulations against handling dead bodies both during the centuries before Christian times and in the later Christian world (Brown, P. 1981; Bynum & Gerson 1997). Nevertheless, as mentioned, bodies of deceased holy persons could be exhumed and the bones collected. While the bones from one individual were more often kept together during the earlier phase of the cult, it became more common to separate elements or to fragment the remains in the High Middle Ages (Bynum & Gerson 1997). Parallel to the need for relics, due to the crusades and other longer journeys, the

practice of evisceration or excarnation, often denoted *mos teutonicus*, increased among clerical authorities and the nobility. This practice facilitated the transport of a body when a person of importance died far away from home (Weiss-Krejci 2001). Evisceration was the less invasive procedure; here the entrails and the heart were removed and buried at one location and the body in another. This process could then involve different types of embalming. Applied techniques are known in detail from written protocols in some cases, including the removal of internal organs, insertion of desiccating plants, closing with sutures and sometimes the spreading of salt on the corporeal remains (Schäfer 1920; Fulcheri 1996). Besides intentional interventions there are also many examples of naturally mummified holy bodies (see Fulcheri 1996 for a review). Historical records show that in Germany, France and England, excarnation, the more severe procedure with removal of all soft tissue, was especially common during the period 1000 to 1200s (Schäfer 1920; Brown, E. A. 1981; Weiss-Krejci 2001). At least one possible case is known from medieval Denmark, where the archbishop of Lund, Jacob Erlandsen, is known to have been skeletonized after his death in Rügen in 1274 (Mårtensson 1973). Both passive and active excarnation existed. In the former case, bones were collected after being buried for a period in a grave or a crypt (Weiss-Krejci 2001, 2005). In the latter case, the body underwent a cleaning process. Detailed descriptions exist of how some bodies were dismembered and the remains boiled in water, milk, wine or vinegar so that the flesh could be more easily removed (Schäfer 1920; Brown, E. A. 1981; Weiss-Krejci 2001). Secondly, the bone elements were left to dry and sometimes perfumed to create scent comparable to the odour of sanctity (Brown, P. 1981:75f; Charlier *et al.* 2013). The process is described, for instance, in the *Song of Roland* (*Chanson de Roland*) recorded in the early 1100s (*Rolandssången = La chanson de Roland*, song CCXIII, in Duprez & Carlstedt 2010). Though it is mentioned that a razor was used when preparing the remains of Santa Chiara da Montefalco, and knives and an axe when preparing the body of King Henry I (Schäfer 1920; Fulcheri 1996:223), few descriptions exist of how the scraping of bones was to be carried out. However, it is clear that people could go to great lengths to remove, for example, a heart. The degree of decisiveness is well illustrated by the discovery of a French 11th-century knight who had his sternum split vertically, resulting in a complete midline sternotomy (Mafart *et al.* 2004). Also, little is known regarding the pattern of dismemberment or disarticulation, but the body of Don John of Austria is believed to have been ‘split at the joints’ (Petrie 1967). The persons who carried out the craft of dismemberment had varying backgrounds. For lay people, confessors, fellow

soldiers, a cook and a butcher are known to have performed the deed (Mafart *et al.* 2004). However, in most cases the body was prepared by canons, clerics, monks, nuns or other people working within the Christian orders (Schäfer 1920; Fulchereri 1996; Fornaciari *et al.* 2008). Even though these procedures could be regarded as functional, the aim when working with the body of a saint could also be, somewhat paradoxically, a way to confirm the incorruption of the body and hence the holiness of the individual. The saints were seen as righteous before death, and to avoid any doubt about their sacredness (i.e. in the form of decay) their bodies were treated with extra care. Pope Boniface VIII condemned *mos teutonicus* in a bull in 1299 and again in 1300. The ban seems not to have applied to the collection of bones. Brown has suggested that that there was a belief that an individual's soul had not been completely separated from the body until the flesh dissolved, implying that the deceased was not really dead until only bones remained (Brown, E. A. 1981). The prohibition seems not to have had a major effect on the practice of *mos teutonicus*. Even though the formal acknowledgement from Christian authorities was the most important step, it is conceivable that the preparation of the body of a saint and the successive 'creation' of relics also were important steps where the remains gradually increased in sacred energy or at least increased in importance for the environment. The treatment legitimized and strengthened the prominence of the remains for all players involved (Humphrey & Laidlaw 1994; Habbe 2005). A recent anthropological study of some European monastic groups emphatically demonstrates this legitimization process (Sbardella 2013). In the study, the preparation of bones, turning them into relics, is not only part of the cult and recognition of a person (in this case Françoise d'Amboise), but has its own strong spiritual value. When the collecting, cleaning and preparation were finished, the relics had reached a new religious level and were ready to enter into the Christian liturgy.

No detailed description exists regarding this practice from Swedish contexts, but since most saints were martyrs and confessors who originally lived outside Scandinavia the bodies were already processed before arriving at local Christian institutions. This means that in most cases, for foreign saints the selection of elements and their breaking into fragments had already taken place when the relics arrived in Scandinavia. The bodies of local martyrs or confessors, on the other hand, most likely underwent similar procedures to their international counterparts. An exception is Saint Birgitta. Though not all details are known regarding the excarnation, the post-mortem preparation of the body in the Panisperna convent is documented (see references in Collijn 1929). For other Swedish saints the amount of time between death and post-mortem

preparation varied greatly due to the religious status of the holy person. For instance the bones of Saint Catherine were exhumed approximately seven years after her death in 1381 (*Processus seu negocium canonizationis B. Katerine de Vadstenis*, 62, in Collijn 1942–1946), while the bones of Saint Brynolf who died in 1317 were unearthed and cleaned 96 years later (Mr Lambertus's statement in *Scriptores rerum Suecicarum Medii Aevi* regarding the exhumation ossium of Saint Brynolf, in Bygdén *et al.* 1954:53, 106). Saint Erik had been buried for approximately one hundred years before the translation in 1257 (however see Carlsson 1944:98). The soft tissue had most likely decayed, leaving disarticulated bones. Some degree of mummification could explain the signs of scraping on some of the bones (Sten *et al.* 2016). Additionally, it is possible that it was in connection with the initial translation that the bones were varnished with albumin. Similar protective coatings of wax or animal glue are known from other Swedish relics (Gustav Magnusson's witness statement 12th of April 1417 in *Scriptores rerum Suecicarum Medii Aevi* regarding the exhumation ossium of Saint Brynolf, in Bygdén *et al.* 1954:53, 106), and from abroad (Koudounaris 2016:67). In all, ex-carnation was practised in Sweden, though it seems first and foremost in a passive sense. When the preparation of the remains was completed they had started to transform into complete relics. These sacred objects could now be placed in reliquaries, a specific material category which together with sculptures of saints had the single purpose of carrying, shielding but also displaying, the holy body. Furthermore, these 'bodies' could be decorated in gold, silver and jewels according to the dimensions of the relics (e.g. Andersson 1983:94).

Phase two: the trade and exchange

The second phase of physical handling involves the selection and movement of the remains, now relics. After the translation the relics were not left to rest in a reliquary but were included in an administrative system. The religious centres received numerous requests for relics from ecclesial authorities and kings all over Europe. It is clear that the flow of relics was not unidirectional. Corporal remains were also exported from Sweden to the continent, as shown by the distribution of relics of St Birgitta from Vadstena in the 15th century (e.g. SDHK-no: 16079, SDHK-no: 16840, SDHK-no: 16790). The transport, trade or purchase of the holy objects forced the carrier to wrap up, contain and shield the relics accordingly. A classification of relics into primary (*reliquiae insignes*) and secondary relics has convincingly been shown to be a 20th-century construction (Smith 2015). Smith (2015) mentions that some medieval scholars put bodily remains ahead of other relics, but also that

there existed no general ranking system. Nevertheless, personal preferences or practical reasons could possibly have affected which elements were to be sent (see below). The transport of and demand for specific popular saints necessitated harsh methods to fragment the remnants. Hence, together with the status of a particular saint, this fragmentation implies that it is possible to rank the Christian institution or altar. It is also likely that the relics chosen for export from centres of relics in most cases were of smaller size, if the relic type was not specified in the request from the receiver. This could explain the extremely fragmented state of many remains, including several internationally known saints, in Swedish reliquaries. The likelihood that bones were already in a fragmented state on arrival at the church is further strengthened by the small size of the many altar chambers in the diocese of Lund. The transport and arrival of a relic could be associated with a great official reception. For instance when a bone of Saint Hemming arrived from Åbo on 12 July 1514, a procession of clergy accompanied the relic to the main church (Storkyrkan) in Stockholm where a mass was held (*Stockholms stads tänkeböcker 1504–1514*, 1931:370). The formal recognition and general acceptance affected the popularity and hence the demand for certain saints, and with time the degree of fragmentation of the body. Saint Erik was not venerated to the same degree as Saint Birgitta outside Scandinavia, but local institutions showed a keen interest in the saint and the relics (e.g. SDHK: 9037, SDHK: 22327). This could explain the low number of bone elements in the shrine in Uppsala. As mentioned, the remaining elements include both the crania of the monarch and the severed cervical vertebra (i.e. a wound of martyrdom). These elements have strong connotations of both his earthly and heavenly powers, and it is suggested that these particular bones had a special value and have been deliberately kept at the cathedral. Since no post-mortem sharp force trauma similar to the ones identified in the shrine of Saint Birgitta were documented, no further intentional fragmentation seems to have been needed. Since the attributions of the relics from the Swedish History Museum are vague it is not clear how these remains ended up in the reliquaries. The strict procedures that preceded canonization suggest that the bones were collected in good faith (e.g. Myrdal & Bärrenhielm 1994:120). Only one of these bones, humerus 41351 (SHM 6), exhibits traces of clear post-mortem treatment while the other fragments, including a rib from an animal, seem to have rested undisturbed (perhaps due to inaccessibility in an altar chamber). However, there are examples which indicate an almost demonstrative lack of interest in the authenticity of the bones (i.e. that they originate from a particular saint). For instance in the reliquary of the Viklau Madonna statue from

the late 12th century, remains were discovered that were radiocarbon-dated to the Bronze Age (Lindberg 2013). Returning to humerus 41351, the incisions give a good insight into the moment when the relic was handled. The damage shows that a narrow-edged sharp tool cut into the bone from three different sides, but that none of the cuts were deep enough to split the element. The incisions could have arisen on three different occasions, but more likely it was one event when the bone was approached from different angles and then broken in two. This would then imply that the person who was working the bone did not have access to a sufficiently powerful tool. This is supported by the direction of the *striae* in one of the cut surfaces, showing that a sawing motion was used despite the apparently thin non-serrated edge. The superficial cuts are consistent with incisions sometimes referred to as false starts in forensic settings which could be interpreted as a sign of hesitation or uncertainty on the part of the perpetrator.

The deliberate division of holy bodies and the post-mortem treatment of bones in the Swedish reliquaries involving, for instance, the bisecting of elements was part of the Roman Catholic cult but also demonstrates local variation connected to the status of particular saints (i.e. the fragmented body of Saint Birgitta versus the ‘complete’ body of Saint Erik).

Phase three: the active days

In the third phase the relic had reached its full operational potential. The force it carried had the ability to change lives. Hence, this operating phase relates to the agency of the relic within the sanctuary. It is an active time when people belonging to the same emotional community experience an attraction to and veneration of the relic through physical closeness and handling (see Rosenwein 2006 regarding emotional communities in the Middle Ages). The dialogue between the relic and the worshipers was ongoing and self-fulfilling; the more devotion, the greater the strength of the holy body. Medieval long journeys of pilgrimage demonstrate the attraction and desire to visit Christian centres to repent, solve a life crisis and a longing to get close to sacred objects and hence the ‘holy’ (e.g. Fröjmark 1992:21). While touching of relics is not typically mentioned in Swedish miracle descriptions, it is clear that it occurred (Myrdal & Bäärnhielm 1994:15). For example a mentally unstable woman got well after the cranium of Saint Birgitta was placed on her body (*Acta et processus* 1959:237–288). In a second illustration, the cranium of Saint Catherine was reverently kissed by the archbishop, all the gathered clergy and nobles during the translation of her remains in 1489 (Nils Ragvaldsson, in Fritz & Elfving 2004:47). In a miracle de-

scription concerning Saint Brynolf, a canon was cured of his deafness when he rinsed his ears with water used to clean the relics of the holy man (Bäärnhielm 1994:190). A fourth example is perhaps more remarkable. In a letter dating from 1279, the Swedish Dominican monk Petrus de Dacia describes the happiness he experienced when he had the cranium of a saint on a string around his neck when walking from Stommel near Cologne to Lübeck on his way to Visby (Petrus de Darcia, *Om den saliga jungfrun Kristina av Stommel*, in Lundén 1950:196). These examples illustrate the manifest physical contact (touching, kissing, cleaning, and carrying) the clergy and congregation had with holy bodies. There is a difference in the physical touch of remains in this phase compared to that of the two earlier which had more secular purposes (preparation, preservation and distribution). The close contact with the relics of the third phase was also functional since it is in this stage that their religious potential was fully employed. This is demonstrated in the polished and thumbbed surfaces of the examined bones in the Swedish reliquaries which are indirect traces of veneration and rapture. The intensity of these emotional moments is frozen in these marks on the bones. They can be said to represent the physical meeting – the palpable interaction – between the devotees and the saint (see also Immonen & Taavitsainen 2011).

DISCUSSION

The phenomenon of relics encompasses at least two research fields: the archaeology of the body and the archaeology of the senses. The first arena focuses on socio-cultural aspects of the human body and the later on experienced perceptions. Things and dead bodies can exert agency (Gell 1998; Latour 2005; Tung 2014), and it is well known that the sensory experience of things can cause strong emotional involvement (Seremtakis 1994). Furthermore, through the miracle stories it is clear that the intense emotions that contact with relics gave rise to was not only rooted within the discourse of the cult, but also within medieval society (Fröjmark 1992; Myrdal & Bäärnhielm 1994). From the recognition of the holy body, through stages of corporeal preparation, organized distribution, manufacturing of shrines to the final placement of the sacred element – there was a common unifying conviction of a beneficial strength of the relic. The practical management of the relics in Swedish shrines seems to follow the same procedures as in other Catholic countries of the time, comprising all the conscious steps from excarnation to reverent display. The presence of bones, strongly associated with the

monarchy and to martyrdom, in the shrine of the nationally important Saint Erik indicates that active choices were made to keep the most important relics for the local Christian centre (at least in this case). Additionally, active choices were made regarding which bones to section and to distribute. These actions could have been preceded by negotiations in which the recipient's request and religious and social status were taken into account. As mentioned, little is known about the actual practical handling of the bones – who cleaned or fragmented the elements and which specific procedures were undertaken. The descriptions in historical records are brief and vague, suggesting that these practicalities in themselves were not of significance and that the practice was a conventional responsibility for the clergy. Nevertheless, the interpretation of the sharp force lesions on humerus 41351 indicates that inadequate tools were applied and possibly that the person faltered when performing the act. If rougher handling of relics, such as bisecting of bones, only occurred on rare occasions this would be a logical pattern. It is also possible that the closeness to a holy body aroused strong emotions which could have affected the performer with feelings of humility, joy or nervousness.

It is advocated that the fragmented state of the relics correlates with the significance of the Christian institution and perhaps with their roles in the cult. Though a relic the size of a breadcrumb could uphold the power of a complete body, the visual and palpable experience of the holy bone was reduced and thereby their function changed. This could imply that these relics were planned, from their 'creation', to end up as altar relics. This notion is supported by the fact that only in rare cases could a fragment in one of the altar chambers in the diocese of Lund be identified as bones from a human (Karlsson 2015). It is also suggested that small fragments without any signs of post-mortem handling could be identified as altar relics (though with a variation associated with saint, religious centre and time period). This would then indicate that there existed a strategy for the relic, at least within the church organization, already when a bone was selected and that preservative actions were discarded. However, phases two and three of relic handling may have been more or less parallel over time and they are intertwined with each other. A saint could be venerated in various ways within the cult. Hence, relics lived different and changeable lives in the churches, at pilgrimage sites and in mobile containers. Some relics were more likely to be exposed to tactile reverence and to fragment further, while others reached their final storage at an early stage.

The difficulties in identifying the origin and dating of most of the elements in the contexts of relics discussed above hinder an identifica-

tion of trends or a critical breakdown of differences in time between the materials. However, the condemnation of *mos teutonicus* by Pope Boniface show that the regulations and practical treatment of holy osseous remains did, at least formally, change. This is much likely also true for the emotional meeting between the saint and the devotee; sensorial experiences are not universal but culturally specific (Hamilakis 2013). It can therefore be expected that the physical handling changed with time, differed between regions or between Christian institutions of different status. The osteological analysis of bones in shrines and simpler reliquaries demonstrate a constant interplay between practical decisions, religious doctrines, hierarchical rankings and emotional experiences.

SUMMARY

The practical handling of relics is more or less mentioned in international (and a few national) records but the osteological analysis of relics from three different contexts made it possible to get a more detailed insight into the treatment of specific bones. The analysis also made it possible to distinguish three *physical* phases of the cult of relics. The three phases demonstrate the fortitude of belief, the utilitarian administration but also the sometimes (for a present-day observer) paradoxical management. The intentional fracturing, marks of scraping and sharp force lesions on some of the elements demonstrate that there was no aversion to breaking, cutting or sawing the bones of saints among the clergy. It is clear that this treatment was a natural part of the practice of administration and distribution associated with institutions that housed relics of important saints. Since the relics were the complete bodies of holy persons, still operating on earth with the agency to affect both life and afterlife, traces of physical contact are significant. Not only the objects but also the traces of alteration and touch constitute important remnants of the cult. Additionally, since the cult and the illusive components of the faith are challenging to understand, the osseous sacred objects and their post-mortem life offer tangible insights into medieval religious life.

ACKNOWLEDGEMENTS

I would like to thank Elisabet Regner, Kurt Villads Jensen and Anders Andrén for comments on an earlier version of the manuscript. I am also grateful for valuable comments by two anonymous reviewers.

REFERENCES

- Abou-El-Haj, B. 1991. The Audiences for the Medieval Cult of Saints. *Gesta*. Vol. 30. Pp. 3–15.
- Acta et processus*. 1959. *Himmelska uppenbarelser* 4. Translated by: T. Lundén. Pp 237–288. Malmö: Allhem.
- Aili, H. 1990. Den fromme S:t Erik: Erikslegenden. In: Aili, H., Ferm, O. & Gustavsson, H. (Eds). *Röster från svensk medeltid*. Pp. 90–103. Stockholm: Natur och Kultur.
- Andersson, A. 1983. *Vadstena klosterkyrka: II Inredning*. Stockholm: Almqvist and Wiksell International.
- Bäärnhjelm, G. 1994. Brynolfs mirakler. In: Myrdal, J. & Bäärnhjelm, G. (Eds). *Kvinnor, barn & fester i medeltida mirakelberättelser*. Pp. 157–196. Skara: Skaraborgs länsmuseum.
- Bass, W. M. 1987. *Human Osteology: A Laboratory and Field Manual of the Human Skeleton*. Columbia: Missouri Archaeological Society.
- Belting, H. 1994. *Likeness and Presence: A History of the Image before the Era of Art*. Chicago: The University of Chicago Press.
- Bentley, J. 1985. *Restless Bones: The Story of Relics*. London: Constable.
- Bildt, C. 1893. Sankt Birgittas relikier i Rom. *Kongl. Vitterhets historie och Antiquitetens Akademiens månadsblad*. Vol. 22. Pp 16–30.
- Brown, E. A. 1981. Death and the Human Body in the Later Middle Ages: The Legislation of Boniface VIII on the Division of the Corpse. *Viator*. Vol. 12. Pp. 221–270.
- Brown, P. 1981. *The Cult of the Saints: Its Rise and Function in Latin Christianity*. Chicago: University of Chicago Press.
- Buikstra, J. E. & Ubelaker, D. H. 1994. *Standards: For Data Collection from Human Skeletal Remains*. Arkansas Archeological Survey Research Series. No. 44. Fayetteville, AK: Arkansas Archeological Survey.
- Bygdén, A., Gejvall, N.-G. & Hjortsjö, C. 1954. *Heliga Birgittas relikier*. Lund: Gleerup.
- Bynum, C. W. & Gerson, P. 1997. Body-Part Reliquaries and Body Parts in the Middle Ages. *Gesta*. Vol. 36. Pp. 3–7.
- Carlsson, E. 1944. *Translacio archiepiscoporum: Eirikslegendens historicitet i belysning av ärkebiskopssätets förflytning från Upsala til Östra Aros*. Uppsala: Uppsala Universitets Årsskrift.
- Charlier, P., Poupon, J., Jeannel, G.-F., Favier, D., Popescu, S.-M., Weil, R., Moulherat, C., Huynh-Charlier, I., Dorion-Peyronnet, C., Lazar, A.-M., Hervé, C., de la Grandmaison, G. L. 2013. The Embalmed Heart of Richard the Lionheart (1199 A.D.): A Biological and Anthropological Analysis. *Scientific Reports*. Vol. 3. Pp. 1296.
- Collijn, I. 1919. Stockholms Storkyrkas återfunna relikier jämte några arkivaliska bidrag till S:t Göransstatyns datering. *Fornvännen*. Vol. 21. Pp. 21–42.
- Collijn, I. 1929. *Birgittinska gestalter: Forsknigar i italienska arkiv och bibliotek*. Uppsala: Michaelisgillet.
- Collijn, I. (Ed.). 1942–1946. *Processus seu negocium canonizacionis B. Katerine de Vadstenis*, 62. Svenska Fornskriftsällskapets samlingar. Series 2:3. Uppsala: Svenska fornskriftsällskapet.
- Crowder, C., Rainwater, C. W. & Friddle, J. S. 2013. Microscopic Analysis of Sharp Force Trauma in Bone and Cartilage: A Validation Study. *Journal of Forensic Science*. Vol. 58. Pp. 1119–1126.

- Duprez, L. & Carlstedt, G. (Eds). 2010. *Rolandssången = (La chanson de Roland)*. Stockholm: Bonnier.
- Fornaciari, A., Giuffra, V., Marvelli, S. & Fornaciari, G. 2008. The Blessed Christina from Spoleto: A Case of 15th Century Artificial Mummy from Umbria (Central Italy). In: Atoche, P., Rodriguez, C. & Ramirez, A. (Eds). *Mummies and Science. World Mummies Research. Proceedings of the VI World Congress on Mummy Studies*. Pp. 521–527. Santa Cruz de Tenerife: Academia Canaria de la Historia Ayuntamiento de Teguiuse.
- Freeman, C. 2011. *Holy Bones, Holy Dust: How Relics Shaped the History of Medieval Europe*. New Haven: Yale University Press.
- Fritz, B. & Elfving, L. 2004. *Den stora kyrkofesten för Sankta Katarina i Vadstena år 1489: Samtida texter med översättning och kommentar/utgivna genom Birgitta Fritz och Lars Elfving*. Stockholm: Kungl. samfundet för utgivande av handskrifter rörande Skandinaviens historia.
- Fröjmark, A. 1992. *Mirakler och helgonkult: Linköpings biskopsdöme under senmedeltiden*. Stockholm: Almqvist and Wiksell International.
- Fulcheri, E. 1996. Mummies of Saints: A Particular Category of Italian Mummies. In: Spindler, K., Wilfing, H., Rastbichler-Zissernig, E. & ZuNedden, D. (Eds). *Human Mummies: The Man in the Ice*. Vol. 3. Pp. 219–230. Vienna: Springer.
- Fürst, C. M. 1918. *Birgittas relikver: Offprint from Birgittautställningen 1918*. Uppsala: Statens Historiska Museum.
- Geary, P. 1983. Humiliation of Saints. In: Wilson, S. (Ed.). *Saints and their Cults*. Pp. 123–140. Cambridge: Cambridge University Press.
- Geary, P. 1986. Sacred Commodities: The Circulation of Medieval Relics. In: Appadurai, A. (Ed.). *The Social Life of Things: Commodities in Cultural Perspective*. Pp. 169–192. Cambridge: Cambridge University Press.
- Geary, P. 1990. *Furta Sacra: Thefts of Relics in the Central Middle Ages*. Princeton: Princeton University Press.
- Gell, A. 1998. *Art and Agency: An Anthropological Theory*. Oxford: Oxford University Press.
- Habbe, P. 2005. *Att se och tänka med ritual: Kontrakterande ritualer i de isländska släktsagorna*. Lund: Nordic Academic Press.
- Hahn, C. 2017. *The Reliquary Effect: Enshrining the Sacred Object*. London: Reaction Books Ltd.
- Hamilakis, Y. 2013. *Archaeology of the Senses: Human Experience, Memory and Affect*. New York: Cambridge University Press.
- Head, T. 1999. The Cult of the Saints and Their Relics. *The ORB: On-line Reference Book for Medieval Studies*. [online] Available at: <the-orb.arlima.net/encyclopl/religion/hagiography/cult.htm><http://the-orb.arlima.net/encyclopl/religion/hagiography/cult.htm> [Accessed 8 September 2016].
- Hjortsjö, C.-H. 1952. *Birgittas jordiska kvarlevor*. Lund: Svenska expeditionen för Arkeologisk Antropologi.
- Humphrey, C. & Laidlaw, J. 1994. *The Archetypal Actions of Ritual: A Theory of Ritual Illustrated by the Jain Rite of Worship*. Oxford: Clarendon Press.
- Immonen, V. & Taavitsainen, J.-P. 2011. Finger of a Saint, Thumb of a Priest: Medieval Relics in the Diocese of Turku, and the Archaeology of Secular and Sacred Bodies. *Scripta Instituti Donneriani Aboensis*. Vol. 23. Pp. 141–173.

- Ingelmark, B. E. 1954. Skelettdelarna i Erik den Heliges relikskrin. In: Thordeman, B. (Ed.). *Erik den Helige*. Pp. 233–268. Stockholm: Nordisk Rotogravyr.
- Joyce, R. A. 2005. The Archaeology of the Body. *Annual Review of Anthropology*. Vol. 34. Pp. 138–158.
- Karlsson, M. 2015. *Konstruktionen av det heliga: Altarna i det medeltida Lund*. Lund, Vetenskapssocieteten i Lund.
- Kimmerle, E. H. & Baraybar, J. P. 2008. *Skeletal Trauma: Identification of Injuries Resulting from Human Rights Abuse and Armed Conflict*. Boca Raton: CRS Press.
- Koudounaris, P. 2016. *Heavenly Bodies: Cult Treasures and Spectacular Saints from the catacombs*. London: Thames and Hudson.
- Latour, B. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Leipe, L. 2015. Det befolkade rummet: Relikfyndet från Torsken kyrka. In: Haugdal, E., Olausson, H. & Aamold, S. (Eds). *Berört av byggnader: Festskrift för Ingebjørg Hage*. Pp. 261–274. Tromsø: Nordlit.
- Lewis, J. E. 2008. Identifying Sword Marks on Bone: Criteria for Distinguishing Between Cut Marks made by Different Classes of Bladed Weapons. *Journal of Archaeological Science*. Vol. 35. Pp. 2001–2008.
- Lindberg, H. 2013. Viklaumadonnan. In: Hedman, L. (Ed.). *En sak till bara: 12 experter spännande berättelser om 32 fantastiska föremål på Historiska museet*. Pp. 100–101. Stockholm: Historiska museet.
- Lundén, T. 1959. *Himmelska uppenbarelser 4: [av] den heliga Birgitta; till svenska av Tryggve Lundén*. Pp. 237–288. Malmö: Allhem.
- Lundén, T. 1973. *Svenska helgon*. Stockholm: Verbum.
- Mackendrick, K. 2010. The Multipliable Body. *Postmedieval: A Journal of Medieval Cultural Studies*. Vol. 1. Pp. 108–114.
- Mafart, B., Pelletier, J. & Fixot, M. 2004. Post-mortem Ablation of the Heart. Medieval Funerary Practice. A Case observed at the Cemetery of Ganagobie Priory in the French Department of Alpes De Haute Provence. *International Journal of Osteoarchaeology*. Vol. 14. Pp. 67–73.
- Mårtensson, A. W. 1973. En märklig grav i gråbrödernas klosterkyrka i Lund. *Kulturen*. Vol. 1973. Pp. 137–144.
- Martling, C. H. 2001. *En svensk helgonkrönika*. Skellefteå: Artos.
- Montgomery, S. 2009. *St Ursula and the Eleven Thousand Virgins of Cologne*. Bern: Peter Lang.
- Myrdal, J. & Bäärnhielm, G. 1994. *Kvinnor, barn & fester i medeltida mirakelberättelser*. Skara: Skaraborgs länsmuseum.
- Nils Ragvaldsson. Nils Ragvaldssons berättelse om Sankta Katarinas skrinläggning. 2004. In: Fritz, B. & Elfving, L. (Eds. and transl.). *Den stora kyrkofesten för Sankta Katarina i Vadstena år 1489: Samtida texter med översättning och kommentar*. Pp. 30–61. Stockholm: Kungl. samfundet för utgivande av handskrifter rörande Skandinaviens historia.
- Nilsson, M., Possnert, G., Edlund, H., Budowle, B., Kjellström, A. & Allen, M. 2010. Analysis of the Putative Remains of a European Patron Saint – St. Birgitta. *PLoS ONE*. Vol. 16: 5(2). Pp. e8986.

- Petaros, A., Cavka, M. & Skrobonja, A. 2011. Relics as Paleopathological Evidence from the Past: Tooth relics. *Bulletin of the International Association for Paleodontology*. Vol. 5. Pp. 28–35.
- Petrie, C. 1967. *Don John of Austria*. New York: W.W. Norton and Company.
- Petrus de Dacia. 1950. *Om den saliga jungfrun Kristina av Stommel*. Translated by T. Lundén. Stockholm: Bonniers.
- Rosenwein, B. H. 2006. *Emotional Communities in the Early Middle Ages*. Ithaca, NY: Cornell University Press.
- Sbardella, F. 2013. La fabrique des reliques: Manipulations et production de sacré dans la clôture. *Conserveries mémorielles*. Vol. 14.
- Schäfer, D. 1920. Mittelalterlicher Brauch bei der Überführung von Leichen. *Sitzungsberichte der Preussischen Akademie der Wissenschaften*. Vol. XXVI. Pp. 478–498.
- SDHK= Svenskt Diplomatariums huvudkartotek. [online] Available at: <riksarkivet.se/sdhk> [Accessed 10 October 2016].
- Seremtakakis, C. N. 1994. *The Senses Still: Perception and Memory as Material Culture in Modernity*. Chicago: University of Chicago Press.
- Smith, J. M. H. 2015. RELICS: An Evolving Tradition in Latin Christianity. In: Hahn, C. & Klein, H. A. (Eds). *Saints and Sacred Matter: The Cult of Relics in Byzantium and Beyond*. Pp. 41–60. Washington, DC: Dumbarton Oaks Research Library and Collection.
- Sten, S., Lovén, C., Kjellström, A., Lidén, K., Vretemark, M., Hongslo Vala, C., Ljunggren, Ö., Fjällström M., Shalabi A., Duvernoy O., Segelsjö M., Malmström H. & Jakobsson M. 2016. Erik den heliges skelett. *Fornvännen*. Vol. 111. Pp. 27–40.
- Stockholms stads tänkeböcker 1504–1514: Utg. af Kungl. Samfundet för utgifande af handskrifter rörande Skandinaviens historia med understöd af Stockholms stad och samfundet Sankt Erik genom Joh. Ax. Almquist*. 1931. Stockholm.
- Thordeman, B. 1954. *Erik den Helige*. Stockholm: Nordisk Rotogravyr.
- Thordeman, B., Källström, O. & Rydbeck, M. 1951. *Reliker och Relikvarier från svenska kyrkor: Tillfällig utställning*. Stockholm: Statens historiska Museum.
- Tung, T. A. 2014. Agency, 'Til Death Do Us Part? Inquiring about the Agency of Dead Bodies from the Ancient Andes. *Cambridge Archaeological Journal*. Vol. 24. Pp. 437–452.
- Van Strydonck, M., Eryvynck, A., Vandenbruaene, M. & Boudin, M. 2009. Anthropology and 14C Analysis of Skeletal Remains from Relic Shrines: An Unexpected Source of Information for Medieval Archaeology. *Radiocarbon*. Vol. 51. Pp. 569–77.
- Walsham, A. 2010. Introduction: Relics and Remains. In: Walsham, A. (Ed.). *Relics and Remains*. Pp. 9–36. Oxford: Oxford University Press.
- Weiss-Krejci, E. 2001. Restless Corpses: Secondary Burials in the Babenberg and Habsburg Dynasties. *Antiquity*. Vol. 75. Pp. 769–780.
- Weiss-Krejci, E. 2005. Excarnation, Evisceration, and Exhumation in Medieval and Post-medieval Europe. In: Rakita, G., Buikstra, J., Beck, L. & Williams, S. (Eds). *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millennium*. Pp. 155–172. Gainesville: University Press of Florida.
- Whenham, S. J. 1989. Anatomical Interpretations of Anglo-Saxon Weapon Injuries. In: Chadwick Hawkes, S. (Ed.). *Weapons and Warfare in Anglo-Saxon England*. Pp. 123–139. Oxford: Oxford University Committee for Archaeology.