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THE NATURAL SELECTION: REEVALUATING THE SIGNIFICANCE OF NATURAL PRODUCTS IN VIKING AGE CREMATION RITUALS

Abstract
Interpretations of funerary practices have traditionally focused on aspects that contribute to stylistic chronologies, the construction of narratives, and material that may be visually engaging for museum exhibitions. One example where there has been a loss of information due to the selective removal of archaeological material from the narrative relates to natural products (pebbles, fossils, plant remains, eggshells, minerals, and so forth) which are often found deposited among the cremains in Viking Age burial urns. The aim of this article is to demonstrate the presence and importance of natural products in Viking Age cremation rituals, and to stimulate a discussion about the ways in which they can illuminate various aspects of these rituals. Rather than follow the traditional rhetoric of Viking Age studies, where natural products have often been viewed as too mundane to mention, this paper takes its cues from the wider debate on materiality, and encourages funerary archaeology into a fuller engagement with the range of material remains pertaining to post-cremation practices.

Keywords: natural products, post-cremation practices, funerary archaeology, Viking Period, Central East Sweden, urn graves

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INTRODUCTION

The presence of cremation within the burial tradition of the Late Iron Age in Central East Sweden, and the diverse modes of deposition of cremains, were observable facts long before any scientific potential was ascribed to their osteological analysis. Grave constructions, such as mounds and stone-settings containing burnt bones and pyre remains, are recognized as the dominant grave types of the period, making cremation the most common burial form.

However, in older excavations, where both the motivations and excavation methods might be described as questionable by today's standards, the focus was on artefact collection and 'princely' graves that were well-equipped with grave-goods. The dismissive attitude towards cremains once held by the scientific community is summed up in the words of anthropologist Carl Magnus Furst (1930), who regarded the burnt human bones from the burial urns as 'lacking any scientific importance, and (I believe) that there is no loss if they are not brought to and stored in the Museum[1]' (cited in Gejvall 1991: 56). It was not until the 1940s, when Nils-Gustaf Gejvall[2] (1947, 1991: 56–72) advocated for the careful collection and study of burnt skeletal fragments, that the framework for a normative discussion on the place and importance of cremation studies within Swedish archaeology was established, and that their systematic

collection in the field began. Prior to Gejvall's work, cremains were often[3] discarded, reburied, and/or not registered at all, which has undoubtedly had a direct impact on what has been preserved in museum collections. The logical result is a dearth of any other material that may have been deposited among cremains. In this way, a long-standing focus on stylistically specific and high-quality artefacts and a lack of interest in 'low-priority' material categories found within cremation burials, such as minerals and diverse plant remains, has prevented an accurate assessment of the richness of objects employed in post-cremation rituals. Deficient material, lack of interest in what were considered to be mundane object-categories, and the absence of accompanying documentation are obstacles when studying cremation burials that were excavated during the nineteenth century, and well into the twentieth century, as some of the examples put forward in the text will demonstrate.

Today, the relevance of studying cremation graves is not in question, and both prehistoric and contemporary cremations have been increasingly studied in archaeological contexts (see Williams 2011). The advances in archaeological science and cross-disciplinary collaborations have broadened the range of cremation-related topics (see Kuijt & Cooney 2014; Thompson 2015; Cerezo-Román et al. 2017). Notably, there is a steady stream of high-quality excavation reports and publications dealing with theoretical approaches and critical engagement with grave-related terminology and materials. An example of this critical engagement, with respect to the geographical exploration and limits set out in this article, are the publications based on the analyses conducted on graves excavated in connection with the construction of the new E4 motorway north of Uppsala and the rebuilding of the East Coast Railroad (OKB-project) (e.g. Notelid 2007; Lucas & Lucas 2017).

While there has been a visible shift away from the simplistic narratives of cremation and the topic of cremation is generally approached as a highly thought-provoking, complex, and multistage process (Wickholm 2008: 90; Cerezo-Román & Williams 2014: 240; Kuijt & Cooney 2014: 17; Østigård 2016: 65), there are still aspects of it which are in need of attention. For instance, re-evaluating and stimulating interest in the traditionally neglected object categories has been a challenge even in the twenty-first century, as is illustrated by the fact that the first monograph on carbonised bread from cremation graves of Central East Sweden was only published in 2007[4] (Bergström 2007). Another recurring material category within cremation graves, which is still rarely utilized in comprehensive discussions of post-cremation rituals of the period, is the category of natural products. The boundaries of this concept (Lat./Sw. naturalier, see Artelius 2000) are poorly defined, and as such, 'natural products' is used as an umbrella term to encompass diverse materials, both charred and non-charred, which have been intentionally deposited within the burial space, but are in opposition to artefacts since they were not man-made. Some examples showing the variety of these materials include pebbles, meadow plants, blackthorn fruit, pine needles, cultivated cereals, hazelnuts, minerals, fossils, and eggshells. The adjective 'natural' carries a certain rhetorical weight for archaeological praxis, engagement with things, exposure, interpretation, and care of/for them within a discipline that traditionally assumes the primacy of artificial things for the study of the past. Natural products are accordingly perceived to be static, passive, and hard to interpret and incorporate in the narrative of cremation in the Viking Period. This issue sets the foundation for the overall agenda of this article, which is to highlight the active place and significance of natural products in post-cremation rituals.

THE ART OF NATURAL INURNMENT

The post-cremation practices of processing, manipulation, curation, and circulation of burnt bones are still poorly understood in comparison to peri-cremation, which is the process of burning the body on the pyre. Amongst the post-cremation practices are also the procedures associated with selectivity in the composition of burial urns (cf. Lucas & Lucas 2017:15 for an alternate view). Despite the popular perception that burial urns were used exclusively as containers for cremated human remains, examples in the present text will show that human cremains are sometimes undetectable, or are inurned with, and quantitatively outweighed by,

Figure 1. An aerial photo of burial-ground Täby 75:1. The mound A3 is highlighted by the author of the article. (Photo source: ATA, Dnr. 3768/81.)

other materials, most often osteological material of animal origin[5]. In many cases the burial urns from this geographical area could be described more accurately as composite products of wide-ranging components combined in varied ways in strategies for dealing with death (Jelicic, forthcoming). These observable components might include a stone lid, pottery container, burnt and unburnt osteological material of human and animal origin, pottery shards, bread (organics), slag, metal artefacts, beads, and natural products. A perfect illustration of the richness of natural products deployed in the composition of burial urns is seen in the Viking Age cremation grave no. 3 from burial ground 75 in Arninge, Täby parish, in the province of Uppland. Moreover, this case study demonstrates key issues and sets out terminology and methodological challenges, thus serving as a model for reflections on the relevance of natural products.

The case for the case study – Arninge chiefly burial

The area around Arninge, some 20 km north of Stockholm, has much in common with other landscapes surrounding the Swedish capital: it bears visible testimony to a wide-range of prehistoric activities, and though rich in ancient monuments, it has for decades unavoidably been influenced by the urban development and planning of the Stockholm region. The area started to be especially heavily exploited in the early 1980s in connection with the establishment of Arninge as a commerce and residential centre. As observed by archaeologist Anders Hedman (1996: 7), who refers to the Swedish Cultural Heritage Act: 'At the moment when society's interest in meeting corporate and trade interests (in Arninge) grew to be greater than interests in preservation of cultural heritage several ancient monuments were removed.' One of these archaeologically investigated and completely removed monuments was the complete burial ground Täby 75:1. The corpus of graves, dated from their external structure and furnishings

to the Viking Period, contained two cremation graves and four inhumation graves. Mound no. 3 was located in the northern part of the cemetery, on top of the outcrop, visually dominating its surroundings (Fig. 1). The grave's suprastructure showed a circular plan outline of 10 m in diameter and was superimposed upon the three-aisled longhouse dated to the Migration Period/ Early Vendel Period. Centrally, under the covering stone layer, an impressive cremation layer was uncovered, extending 7.5x5 m in diameter and 0.4 m thick. It contained a whole 90 liters of cremated bones making this grave one of the most bone-rich ever excavated from this period. The cremation layer was thought not to have been disturbed and the cremation was assessed to have been conducted on site (Hedman 1996: 36, 41).

The osteological material was analysed as part of the 'Monumental mound burial project' initiated and completed between the years 1981 and 1985 by osteologists Sabine Sten and Maria Vretemark (1988). Within this project they published previously unanalysed material from the 14 monumental mounds, all dated to the Late Iron Age. The presentation of content of the Arninge A3 grave in this text is based on the quantitative data presented in more detail in Table 1. According to the osteological analyses, the mound contained burnt remains of 5 adult humans, 11 dogs, 7 horses, several species of birds (including trained raptors), several species of fish, pigs, goats or/and sheep, lynx, cattle, cats, and domestic chickens (Hedman 1996: 166–73). Human bones belonged to one female, three males, and one undetermined individual. The cremated female was considered to be 18–25 years old, two men were placed in the age interval of 25–40 years, while one was over 50 years old. The individual whose sex was undetermined has also been estimated to be an adult, 25–40 years. The richness of cremated bones, both in quantity and in variation of species represented, along with the grave goods of premier quality, were taken as an indicator of the high status of the deceased. A compelling narrative of the chieftain burial, with a possible human sacrifice, was created and published with an emphasis on high status indicators such as garnet jewellery, gilded objects, gold foliated beads, and the presence of traces of a large quantity and diversity of animal species (Hedman 1996: 36–9).

However, another narrative emerges if we shift our focus from the high-status objects and animals which were placed on the pyre and represented in the cremation layer, towards a more coherent analysis of the remains of post-cremation practices. After the pyre was extinguished, three burial urns were assembled and deposited within cremation layer (F28, F29, and F30 in the report). The composition of these urns is far from being a representative sample of the richness of materials found within the cremation layer itself. The main, visible part of their contents comprised fragments of burnt human and animal bones, ranging from 245 g to 1097 g per urn, which represents just a fraction of the total osteological material. For the majority of the total weight of cremains after the cremation of an individual (which is approximately 2430 g, see Warren and Maples 1997: 418) not to be archaeologically traceable in the cremation layer, and only small quantities to actually be present in the grave urns, is a well-known pattern for Late Iron Age cremation graves of Central East Sweden. As indicated by the meagre amount of human bones per urn in Arninge, neatly collecting and inurning human cremains was not the objective in urn composition (see Table 1 for exact amounts). Furthermore, in one burial urn, F28, no human remains could be identified. Interestingly, all burial urns contained natural products in the form of rich plant remains, both cultivated and wild species. It is generally considered that the interpretation of single finds, for example berries or plant seeds, is uncertain because it cannot be ruled out that those plants grew in the vicinity of the pyre area and ended up, unintentionally, in the cremation layer in connection with cremation process (Ekblom & Bergman 2017: 14). This could explain, and thus refute as intentional depositions, some single finds of wild meadow-plants within the three Arninge urns. Nevertheless, the richness and extremely large quantities of meadow-plant material such as sadge species, and their combination with the edible cultivated and wild plants such as cereals, hazelnuts, and blackthorn fruit (sloe), is interpreted as an intentional post-cremation deposition.

Table 1. Quantitative data for the content of grave's inner features – Täby 75:1, A3. '~' denotes quantities based on find-list and osteological and archaeobotanical analysis in Hedman 1996. Compiled by Jelicic 2019.

Inner feature	Burnt bone	Unburnt bone	Plants	Artefacts
Urn no. 1 (F28, A3:1)	245g / 116 g identified		Rare spring sedge 55	
			(*Carex ericetorum*)	
	Dog 8g		Sadge 10 (*Carex spicata*)	
	Horse 108g		Meadow buttercup 1 (*Ranunculus acris*)	
			Viola 1 (unspecified)	
			Blackthorn fruit 1	
			(Prunus spinosa)	
Urn no. 2 (F29, A3:3)	1097g / 336g identified	2g/2g identified	Barley 47 (Hordeum vulgare)	Beads 6
			Oat 2 (Avena sativa)	Comb-rivet 1
	Human 163g		Wheat 4 (Triticum aestivum)	Iron nail 1
	Dog 7g	Vole 2g (from different individuals)	Field mustard (Brassica rapa. -Oleifera)	Comb 2 frag.
	Cat 1g	Starling <1g	Wormseed wallflower 1	Iron tack 2
	Horse 146g	Eggshell, ca 15 fragments[i]	(Erysimum cheiranthoides)	Bronze disk 1
	Chicken <1g		Mugworth 1	
			(Artemisia vulgaris)	
			Clover 2 (unspecified)	
Urn no. 3 (F30, A3:2)	512g / 140g identified	1g / 1g identified	Rare spring sedge 1	Iron rivet 1
			(Carex ericetorum)	Iron nail 2
	Human 43g	Fish <1g	Sadge 3 (Carex spicata)	Beads 2
	Dog 80g	(unknown species)	Meadow buttercup 1 (Ranunculus acris)	Bronze pendant 1
	Horse 9g	Eggshell, ca 19 fragments	Cinquefoil/Potentiella 1 (Unspecified)	
	Cat 1g		Sea cole 1 (Crambe maritima)	
	Cattle 10g		False oat-grass 2 (Arrhenatherum elatius)	
	Bird <1g			
	(unknown species)			

Inner feature	Burnt bone	Unburnt bone	Plants	Artefacts
Cremation layer (F19)	56 134g / 5914 g identified	162g/162g identified	↑	51 find-posts in total (see Hedman 1996:131f).
				Among other things:
	Human 1496g (MIND 5)			Silver coins 2 (Bagdad 781/2 and 801/2 AD)
	Dog 1079g	Cattle 64g	Hazelnut 2	Garnet 1
	(MIND 11)	(MIND 2)	(Corylus avellana)	Cowry shell 1
	Horse 3151g	Goat 64g	Blackthorn fruit (sloe) 4	Comb 6
	(MIND 7)	(MIND 1)	(Prunus spinosa)	Silver ingot 1 (65mm)
	Cat 18g	Pig 30g	False oat-grass 2 (Arrhenatherum elatius)	Playing pieces (bone) 25+frag.
	(MIND 2)	(MIND 2)		Gold-foiled bead 33
	Sheep/goat 148g (MIND 4)	Vole 4g (MIND 2)		Silver-foiled bead 29
	Pig 8g (MIND 1)	Bird 5g		Glass bead 53
	Lynx < 1g	(1 chicken, 1 crow, 1 starling, 1 teal)		Glass bead (melted) 49
	Birds 12g (1 eagle owl, 1 goshawk, 4 chicken, 1 teal, 1 tame/ grey goose,1 starling)	Fish 3g		Gold jewellery 2 frag.
	Fish 1g (1 pike, 1 grouper, 1 roach)	(pike MIND 1, grouper MIND 1, roach MIND 2)		Bronze-mounted garnets 2 frag.
				Iron tacks 155

[i] Eggshell is in composition a calcium carbonate product like snail- or seashells, and thus not bone. However, it is listed here under unburnt osteological material because it is detected among cremains by the osteologist during the analysis.

The choice of plants inurned was of a different character for each urn. While the content of urn F28 was dominated by meadow plants, sadge in particular, the urn F29 was rich in domesticated plants. Represented in its content are a combination of barley and wheat kernel and the whole oat spikes with incursion of weed parts, meadow-plants, blackthorn fruit and hazelnuts (Engelmark 1996: 160). Diversity and high content of meadow-plants posed quite a challenge in interpretation, and one of the interpretations proposed was to see their presence as provisions for the sacrificed domestic animals (ibid.). Products made from noble metals, silver and gold, such

as coins, fragments of jewelry and dress decorations, as well as the garnets found distributed within cremation layer, were absent from all three burial urns. Fragmented iron objects (rivets, nails, tacks, tweezers, knives etc.) and glass beads, larger quantities of which were in the cremation layer, were either not discernable in the urn content or were represented by only a few examples, mostly single fragments. In two urns, an egg(shell) was added to cremains. Eggs were not part of pyre goods but unburnt and only 'stained' by being inurned with cremains (Drenzel 2016[6]). Hazelnut and cowry shell were also recorded from the cremation layer.

Arninge grave 3 illustrates two crucial issues for cremation studies: a lack of detail in excavation and a lack of interest in objects which were perceived as less relevant to the grave's interpretation and publication. Thorough analysis of this grave is impeded by the failure of the excavators to document the cremation layer in more detail. Documentation of layer and objects was done hastily under the pressure of bad autumn weather and the property developer's eagerness to start with road construction (Hedman 1996: 69). Time pressure is not just an issue for older excavations, but poses a recurring problem in contemporary ones. It is not unusual that this problem leads to excavations having to be carried out even during the wintertime, when snow and frost force archaeologists to adapt to the poor conditions and prioritize (see for example Hulth 2014: 100). Natural products are rarely detected in the field if water-sieving is not conducted and samples for microfossil analysis taken. It may also be decided during post-excavation work that coal and soil-samples which were collected should be discarded due to a lack of financing or time for their analysis. The research questions and scientific requirement specification formulated by the County Administrative Board prior to excavation may concern (only) the dating of the graves and documenting local socio-economic conditions, in which case datable artefacts and/or status indicators would naturally draw the most attention (combs, beads, weapon, dress-details etc.).

In the case of Arninge mound 3, the samples of plants and eggshell were detected during the later macrofossil and osteological analyses. It is safe to say that excavation methodology, including time pressure, lack of expertise in natural products and financial limitations, played a crucial part for what was actually discernible and collected in the field. The very valuable grave goods used on the pyre overshadowed the mundane, 'silent object-categories' employed in the post-cremation practices. The focus on grave goods of high quality and on stylistically specific artefacts can be inverted to ask how is it that various forms of matter from the same context have different appeals and come to be treated differently during excavation, analysis, interpretation, storage, and publication? This issue of hierarchizing material is not based upon the scientific potential of things and the production of knowledge about Viking Age funerary practices, but was established and normalized during the history of archaeology as a discipline and the way modern science classifies reality.

NATURALLY CULTURAL

Historically, the object-categories found within burial urns have been separated out, each to be classified and dealt with by the relevant expert. One undesirable consequence of this process is the increasing fragmentation of the observable product of the post-cremation act, that is, the burial urn, as classification work proceeds. Different object-categories from cremation burials have usually been studied in isolation giving empirical grounds for the large number of thematic articles and monographs[7], and specialized analyses are today normalized as appendices in excavation reports[8]. The point at issue here is not the existence and significance of the classification process per se. Of that there is no doubt; authors in the area of psychology have clearly defined classification as a core cognitive process (Cohen & Lefebvre 2005). The first problem with the archaeological classification lies, as has already been observed, in the fragmentation of the burial urn, which is not seen in its totality, or as a cohesive product of post-cremation practices. The inurned objects are separated from context and rules of similarity are used to differentiate them into separate groups: natural and artificial. Predictions are made, priorities given, attributions assumed, analyses done, and interpretations provided based on these groupings. Our expectations concerning members of a

Figure 2. (Left) 'Trollträd'; Troll tree is a naturally grown branch-loop with bark. It is one of the Swedish folk medicine most widely used tools – thought to be especially potent in curing rachitis among children. In some cases, people forced young trees to grow in an unnatural way by twining young branches so they would grow in a loop. (Right) 'Torsvigg'; Thor´s wedge - according to folklore originated from thunderstorms, falling down at the place where thunder strikes, and as a consequence, were equipped with magic properties. In accordance with the archaeological classification, the object depicted is a Neolithic/early Bronze Age simple shaft-hole axe. (Modified after Djerf, Mona-Lisa, Nordiska museet.)

category are often shaped by our (modern) experience with already encountered members – for example, inurned hazelnuts are food, an egg is a Christian symbol of rebirth, the meadow-plants are food for sacrificed animals, and so forth. The increase in the number of isolated and specialized examinations of artefacts and natural products is thought to make it hard to gain 'comprehensive knowledge that goes beyond the simple juxtaposition of isolated observations' (Olivier 2011: 22). This is not to say that specialized knowledge and analytical methods are unnecessary. In my opinion the crucial issue is posed by the lack of systematization and a more structured integration between individual specialized examinations of single objects and archaeological interpretations operating within the framework of archaeology of cremation. Performing individual high-quality expert analyses, such as the microfossil analysis done in the case of Arninge, and then not including the results into general interpretation of burial practices, makes it hard to comprehend the nature and complexity of practices that left these material traces. This results in a simple image of cremation in which the peri-cremation practices and their material remains completely dominate the narrative of Viking Age cremation.

The second issue emerging from the archaeological classification of objects into natural and artificial lies in the privilege accorded to the artefact, defined by its opposition in reference to a natural product. In the cognitive sciences it has been observed that all 'of our categories consist in the ways we behave differently toward different kinds of things' (Harnad 2005: 49). Making the distinction between deposited natural products and artefacts in the same context accentuates the dualism that places nature on one side and culture on the other, thus strengthening the naturalistic view of the landscape as a passive container for resources from which things can be picked up and passively used (see Ingold 2000).

As observed by Ingold (2007: 4), it is not straightforward to categorize objects into artificial and natural. For example, there are numerous ethnographic examples relating to Swedish preindustrial folk-life where artefacts, such as the late Neolithic simple shaft-hole axes, were not considered man-made but of a natural origin. There are also examples of natural products 'manufactured' and imitated by the intentional anthropogenic activity (Fig. 2). A systematic ordering and classification of matter, as well as the boundaries of what is efficacious, appropriate and/or anomalous, are created by the specific socio-cultural environment (Douglas 2002 [1966]: 96). The classification and principles guiding classification are thus highly dependent on time-period and place. When dealing with the remains of prehistoric practices we have to recognize the dichotomy that might exist between

'their' taxonomy and modern scientific taxonomy based on, among other things, the Linnean scheme (Hunn 1976; Medin & Atran 1999; Trumper 2003; Pollock & Bernbeck 2010).

One has to pose two simple questions of how unmodified these natural objects really are and how modified does an object actually have to be to be recognized as a significant cultural object? Swedish archaeobotanist Radoslaw Grabowski (2014: 67) makes a good point when claiming that the plant material recovered from archaeological sites (crops) is never really unmodified, but rather bears witness to very complex processes of human handling, such as harvesting, threshing, cleaning, storing, transporting, roasting, and so forth. He refers to Jones's (2005: 64) statement on how all 'archaeological materials bear witness to their natural origin and cultural modification'. In his doctoral thesis Grabowski analysed cereal production and crop processing, nevertheless, his conclusions on the ambiguous line between the natural and the artificial can, in my opinion, similarly be applied to wild plants found deliberately deposited within cremation burials. Dropwort tubers (Sw. *brudbröd*) and hazelnuts are well known finds in prehistoric cremation burials of Central East Sweden (Viklund 1998; Bergström 2007: 67; Heimdahl 2011). For example, eight Viking Age cremation graves from Birka contained hazelnut shells (Gräslund 1980), as did several graves[9] on the island of Lovön also dated to the same period (see Petré 2011). A large number of dropwort tubers were detectable in samples taken from a cremation layer dating to the Vendel Period in Gnista-mound, Danmark parish. The dropwort tubers were so richly represented that they must have been brought to the site and included in the burial practices (Ekblom 2016: 5). An interesting observation was made by the paleoecologist Jens Heimdahl (2011: 419) that some plant material was charted (roasted) in a form of burnt offerings previous to being deposited in graves. Although, this observation was made within the Bronze Age complex of Nibble in Uppland, it serves as a good illustration of plants being ritualized and undergoing a series of anthropogenic modifications prior to being deposited in graves.

Minerals form another group of natural products that have not received sufficient attention within funerary archaeology. There is

Figure 3. Pieces of the mineral tremolite found deposited among cremains in the cremation burials of Kyrsta, Ärentuna parish: (top) find no. 15 from grave 12209 and (bottom) find no. 16 from grave 13444. (Photo: Anna Jelicic, 2019.)

continuity in the intentional use of quartz, either as a material in grave construction or as a part of grave goods, extending from the Bronze Age up to the Late Iron Age in several Swedish regions (Westman 1998; Carlie 1999; Andersson & Svensson 2005). Small fragments of quartz in Viking Age graves were evident as early as the nineteenth-century excavations of cremation graves at Birka (Bj80a). Another interesting example is the piece of round, white quartz observed underneath the upside-down burial urn from Tureberg grave-field, Sollentuna parish (Nilsson 1972: 47). The use of quartz in burial traditions is especially intensive in the regions of Halland (Streiffert & Strömberg 1998; Carlie 1999; Artelius 2000; Strömberg 2005) and Bohuslän (Gerdin & Munkenberg 2005). However, graves containing a large amount of quartz in Närke, Södermanland, Hälsingland,

and Uppland are starting to draw more attention (Victor et al. 2005: 34; Gustafsson et al. 2006: 218; Emanuelsson & Wikborg 2009; Evanni 2010; Blennå 2012). An extraordinary 870 kg quartz was found within the burial ground of Lilla Sylta in Uppland, of which 780 kg belonged to the two stone-settings, dated to the (late) Migration Period. The interesting observation in this context is that there are no quartz veins or rocks suitable for quarrying quartz in this area, thus quartz used in burial practices is not local and had to be transported (Victor et al. 2005: 34). Another interesting example is *tremolite*, a mineral belonging to the amphibole group of silicate minerals that has been discovered among cremains, possibly inurned, in the two damaged Vendel/Viking Period cremation graves of Kyrsta, Ärentunda parish (Fig. 3) (Engström & Wikborg 2006). Again, tremolite, although common in nature, is not naturally occurring in the Kyrsta area. Due to its crystalline structure characterized by thin, fragile crystals, samples of tremolite are thought not to be able to withstand the force of the moving ice-sheet. Thus, the two samples from Kyrsta are most probably not surface finds — they had to be actively separated from the larger underground block, quarried and transported (Karlsson, 2019). One possible source could be Dannemora mine area, some 35 km away.

There are many ways to classify a group of random objects and/or individuals, and despite all the possibilities we tend to use only the few that are useful for our own research or which relate to the broader research tradition. Archaeological classification of material is traditionally made-to-order for different kinds of artefacts. The classification depends on the properties of an object which one finds interesting in a particular context, and in archaeology the natural-artificial division is a central concern. Within the conceptual boundaries of natural products there is a group of diverse objects for which the common, 'interesting property' has been the fact that they are all 'natural', i.e. unmodified by humans.

One might consider natural products found among cremains mentioned in this text: meadow-plants, cereals, hazelnuts, minerals, and shells, which are easy to imagine as static, unmodified things without a story. They are listed in a catalogue of the archaeological finds without any verbs attached to indicate action, movement, and change. But something happened between the place of their origin and the point at which they become a part of the burial record. Cutting, choosing/picking, roasting, obtaining/buying, arranging, collecting, harvesting, threshing, cleaning, storing, transporting, quarrying, extracting, depositing etc. A long list of verbs can be compiled. Through these actions, it becomes apparent that natural products form a relation to humans. They attracted the interest and actions of humans for their innate properties (like colour, lustre, shape etc.) and/or culturally imbued beliefs. They have been 'pulled' into the sphere of human society and bear witness to continuous anthropogenic modification. Thus, the deposition of natural products should be comprehended as an intentional, conscious choice made within the worldview or preferred modes of thought regarding the time- and location-specific funerary practice. Consequently, objects such as inurned plants, unburnt eggs, and minerals should be evaluated as highly relevant in terms of cultural content.

BURIAL URNS AS COMPOSITE PRODUCTS

The traditional description of the concept of natural products has a direct consequence for how the objects belonging to a concept have been treated in practice. The core concern of this text is not to dwell upon the history of the archaeological discipline, but rather to point out the significance of natural products and the need for the symmetrical integration of the full range of detectable evidence of prehistoric post-cremation practices in the interpretation process. Thus, the central argument is to pay more attention to natural products in analysing and interpreting funerary practices, and this issue is most naturally expressed as the question why should we pay more attention to these objects in burial contexts?[10]

In order to explore this question, closer attention to the microscale mechanisms of burial urn composition and the qualitative effect the urn made on the experiencing subject(s) might provide some interesting insights. Before continuing, an explanation of the term symmetry is required in order not to misconceive or slide

into a trivialization of the 'symmetrical attitude' (cf. Shanks 2007: 591). Symmetry is an attractive concept which has been explored archaeologically in a rich variety of writings dealing with the notion of 'symmetrical archaeology' (Olsen 2003, 2012; Webmoor & Witmore 2005; Witmore 2007, 2014a–b; Olsen et al. 2012; Webmoor 2012; Olsen & Witmore 2015). By highlighting the existence of significant layers of asymmetry present in modern practices of knowledge production, for example the issue of application of the 'clean', pre-formulated dualistic categories onto the things studied based on their qualities (nature-culture, subject-object, human-thing etc.), symmetrical archaeology emphasizes relations and acknowledges the agency of (all) things, both human and non-human (Witmore 2007: 549, 2014a: 206). As Olsen (2003: 88) points out, 'things, all those physical entities we refer to as material culture, are beings in the world alongside other beings, such as humans, plants and animals'. There is also no shortage of texts exhibiting criticism of various aspects of symmetrical archaeology (e.g. Ingold 2012, 2014; Graves-Brown 2013; Sørensen 2013; Barrett 2014; Hodder 2014). I utilize this term mostly in order to emphasize the inequality in how natural products, in comparison to artefacts belonging to the same context, are treated in practice. Opting for the symmetry in approach to these things means advocating for a more thorough reconsideration of the rigid classification of natural-artificial and its implication for the interpretation process. Asking for symmetry also implies that the same methodologies should be applied to all inurned things, whether in this case man-made or natural. Furthermore, a symmetrical approach points to a more reflexive dealing with the disproportion of 'mundane natural things' vs. 'high quality artificial things' utilized in the construction of narrative, both in what is published and what is used in the discourse of cremation burials.

Figure 4. The composition of the burial urn of Grimsta mound A3: (from the top down) before removing the lock-stone, burial urn in situ and its content as published in the final report (not up to scale in order to show details). (Photo documentation provided to the author by Arkeologikonsult AB, 2019.)

The microscale mechanisms of burial urn composition

Within the context of debates on the nature of what is actually discernible in contexts containing cremains, various researchers have

emphasized the need to think outside the modern values of what a grave should contain and how a grave monument should look (Notelid 2007). The evident lack of cremated bones, per what is traditionally classified as a grave, and their highly fragmentary state, usually cannot be explained only by poor preservation and excavation conditions, but is instead a direct outcome of the treatment of the bones after the flames of the pyre had been extinguished (Sigvallius 1994; Kaliff & Østigård 2017). Encounters of burial urns in the field have also evoked questions about the diversity of ways in which they are composed and deposited (Jelicic, forthcoming). The low quantity of inurned human bone is a recurring phenomenon (Hed Jacobssen 2009: 54), and is clearly illustrated by the burial urn content of Grimsta mound no. 3, Fresta parish (Fig. 4). This urn was deposited underneath a stone lid and contained only a few grams of identifiable human cremains. A bronze needle, unburnt eggshell (or a whole egg) and a wheat grain were detected among the burnt bone of a human, a dog and a horse. A Thor's hammer ring was clearly visible on the top (Svensson & Fors 2004).

Another example showing the variety of inurnment strategies is provided by one grave from the burial ground of Söderby, Lövo parish, in which a larger urn containing a smaller one was placed within the pyre layer (grave 31). In the larger urn, below the bottom of the smaller container, 200 fused beads, a bronze chain and a meagre 68 g of burnt bone could be detected (Petré 1986: 75). Burial urns can also be placed upside-down, which is a phenomenon observed at the same burial ground. Archaeologists recovered a part of a whetstone, 96.8 g burnt bone, iron rivets (four fragments), and iron clamps underneath the mouthpiece of one such urn (Petré 1999: 31). Cases where there are two or more urns stacked on top of each other are known as well, as in the case of cremation graves in Tibble, Täby parish (Hed Jacobssen 2009: 34) and Tureberg burial ground, Sollentuna parish (Nilsson 1972: 47). An additional example of complexity of inurment strategies is demonstrated by one grave in Tibble in which the human cremains detectable in the cremation layer and the ones inurned did not belong to same individual (Hed Jacobssen 2009: 54).

Table 2. A list of graves and burial places mentioned in this article.

Grave	Burial-ground[i]	Exc.
A3	Arninge, Täby 75:1	1981
A3	Grimsta, Fresta 83:3	2003
A23	Tureberg, Sollentuna 277:1	1966
A8, A1(a)	Tibble, Täby 136:1	2007
13444	Kyrsta, Ärentuna 329:1	2002
12209		
A31	Söderby, Lövo 13:1	1978–91
A15		
Gnistahögen	Gnista, Danmark 62:1(1)	2013
Bj80a	Birka, Adelsö 118:1	1875
A10	Söderby, Lövo 28:1	1999–2007
A2, A3	Lilla Sylta, Fresta 91:1	2004

[i] Each burial-ground is marked with its RAÄ-number provided by the Swedish National Heritage Board which is searchable in the National Heritage Board´s database for archaeological sites and monuments "Fornsök".

All of the above-mentioned examples (see Table 2 for details) demonstrate a large range of possible options for the composition and deposition of Viking Period burial urns, indicating how different compositions and placements could be perceived as acceptable and efficacious, and that interment of natural products was a commonsense, natural choice in such compositions.

The unifying narrative of human cremains being deposited in so-called 'bone-containers' (Sw. *benbehållare*) does not do justice to the variety of materials included. One could even ask if the term 'bone-container' is in some cases a valid one. Closer attention could be directed towards the individual objects which help constitute the burial urn: a stone lid, pottery, artefacts, natural products, and diverse osteological material. However, this approach breaks down the burial urn into components, which are subsequently

evaluated as single categories with higher and lower priority attached to them. Stone lids usually are not collected and submitted to museums, natural products are neglected in comparison to artefacts, and so forth. To present solutions in line with a symmetrical approach to material culture of cremation, urns could be regarded as composite products specially designed and arranged depending on the local-specific tradition. Within this context, all of the individual components are relevant to the final product's characteristics, which consequently determine its ability and potency to satisfy needs of rituals accompanying the death of a person (cf. Kaliff 1992).

The qualitative effect the urn made on the experiencing subject(s)

Experienced archaeologists identify different types of artefacts based on their physical appearance, so to become an expert in a certain object-typology one has to be attentive to those (physical) informative parts of the objects like material, color, shape, stylistic features etc. The encounter with a burial urn and its description can appear as follows: 'Burial urn: (find 118-4663 / 1, 4659/1, 4662/1) was of the AIV type, light brown, poorly burned ceramics with a diameter of about 18–20 cm. The mouthpieces had a curved edge. The ceramic was sparingly lean with 1–2 mm large grains and was between 0.8 cm (mouth) and 1 cm thick*'*. Nevertheless, what archaeologists are often expected to do is to draw inferences about non-obvious object properties and to answer the question of importance and the meaning given to the objects by people in the past. This approach stems from the understanding that even the most mundane objects are imbued with a force that goes beyond economic and functional uses, and beyond what initially might be suggested by their aesthetic properties. For example, on a microscale, objects can act as pivots around which one might fashion the autobiographical narrative (Hoskins 1998), or on a macroscale their collection and exposure in museums might contribute to constituting nations and nationalities (Kaplan 1994; Boswell & Evans 1999; Knell 2011). These views on objects can be seen as part of a larger trend within several disciplines of the social sciences and humanities, which have been searching for new ways of dealing with our stance towards, and engagement with, materiality, and in particular searching for a more all-encompassing way of appreciating the pluralism and potency of objects, and the effects of their agency (Gell 1998; Latour 1999; 2005; Law & Hassard 1999; Law & Mol 2002; Miller 2005).

With that perspective in mind, what I would suggest is the approach with a focus on a burial urn as a composite product and the effect it might have had on the experiencing subject(s) in the past (for the approach to natural products informed by folklore and ethnographical material see Johanson 2019). When talking about human experience, both intellectual and emotional, directed toward the physical and non-physical objects, a concept of intentionality is often employed (see Brentano & Muller 1995). This concept can be taken as a point of departure for further addressing the question formulated at the beginning of this section. The exploration of intentionality is interwoven within the fabric of a tradition in contemporary philosophy, the phenomenological tradition, which has taken on itself a task to describe the world and people's subjective experience of the world. This means that phenomenology involves 'the attempt to describe the objects of consciousness in the manner in which they are presented to consciousness' (Tilley 2004:1), thus dealing with the pre-theoretical conception of the world. This approach requires that the perceiver withholds from forcing theoretical concepts and pre-enquired knowledge on the observed, thus focusing on the mental attitudes (intentional acts) toward the intentional object (for the terminology used here see Husserl 1970).

Archaeologists are not only on the quest to recognize an object, a thing, to name it and classify it as a vessel of AIV type, but this quest also includes, or in my opinion should include, a search for a better understanding of dimensions of human experience of the objects. The reactions, the mental attitudes that the burial urn as a finished, composite product induces in perceiver, obviously changes over time and is dependent on context. Archaeologists approach it and perceive it using the visual and tactile senses, experience and intellectual capacity, providing among other things, dating and typological determination.

Simply put, we are not affected by the burial urn which we unearth in the manner of, for example, rightness or efficiency. For the people of the past engaged in burial practices this object is not only identified as a 'poorly manufactured container, a visually unattractive vessel'. This is a special kind of vessel when in a burial context, and experiences of this object could also be of a non-sensory nature. Urns are not necessarily created and placed to be seen and touched. Thus, the affect they have is not connected to economic value or aesthetics, but to human experience, to feeling and 'perceiving as' beyond just seeing a simple vessel. The non-sensory experiences such as familiarity, consolation, rightness, belief/faith in its efficacy, hope, confidence or fear that (all) things are inurned in an appropriate (or in a deviant) way etc., might all be components of the experience of the urn. It is conceived in a particular way and things are experienced and assumed beyond 'poorly burned ceramics'.

CONCLUSION

The traditional description of the concept of 'natural products' has a direct consequence for the normative meaning, i.e. how the objects belonging to this concept are treated in practice. Due to the belittling attitude towards them, which is largely based on the anthropocentric division of the world into nature and culture, natural products have traditionally been considered dull, of low priority, not information-bearing and problematic to interpret from the functional perspective. Their natural origin downplayed their cultural significance due to a false perception of the absence of human impact in their modification. It is suggested that in order to avoid biases in how we approach different categories of objects used in post-cremation practices, a burial urn should be analyzed as a coherent, composite product. It could be regarded as an intentional object of an intentional mental state of a perceiving subject and the content of this experience depends on various factors, such as the particular period- and culture-related understanding of the world. The natural products employed in its composition play an active and vital part in the construction of a product, which by the observer or/and creator was probably perceived as proper, acceptable and efficacious for the purpose it was intended to have within post-cremation rituals and in dealing with death in general. Artifacts, like the Thor's hammer ring inurned with cremains depicted in Figure 4, may be man-made and visually appealing, but that does not make them unquestionably more relevant than the natural eggshells or plant remains inurned in the same manner, for the reaction an urn, induced in perceiver or its intended effect in dealing with death. Natural objects do not gain their significance by the importance and meaning archaeologists ascribe to them during the interpretation process and our artificial disciplinary classification. They were already culturally highly significant prior to our interpretation by the fact that they were consciously inurned and preferred above other things that are absent. They are an integral part of the time- and location-specific burial urn composition, thus were once perceived as necessary and/or correct, efficacious etc. A better understanding of culturally-specific social practices relating to cremation, and the recognition of the variety and contextual and temporal characteristics of post-cremation practices (their meaning in context), requires directing our attention towards not only specific artefacts, but towards all material traces of these practices.

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NOTES

[1] That is, at the Swedish History Museum.

[2] It must be stated that there were other people supporting the analysis of burnt bones. Gejvall is specially thanking museum director, Prof. Birger Nerman, 'whose benevolent interest made (Gejvall) have the opportunity to process this material'.

[3] There are also a few bright examples of cremains being collected and preserved even during the nineteenth century, the most prominent being Hjalmar Stolpe's classical excavations of Birka.

[4] Liselotte Bergström's thesis also examines bread findings from sites, e.g. Birka and Helgö.

[5] This is a neutral, summarizing term for all material/mineralized tissue usually analysed by osteologists (i.e. present in their reference-collections) such as bone, teeth, claws, horn, chicken-spurs, antler etc.

[6] Leena Drenzel, an osteologist at The Swedish History Museum re-examined the eggshell fragments in 2016 and determined that they were not burnt (contradicting the previously published analysis). Private correspondence.

[7] Since the beginning of the discipline, materials from grave contexts have been the foundation for archaeological research and thus the list of published texts based upon the grave assemblages is endless. I here provide references to a selection of publications dealing, entirely or in part, with material from cremation graves of the period and area of interest; on grave-bread (Bergström 2007), amulet-rings (Andersson 2005), animal bones (Sten & Vretemark 1988), eggshells (Jelicic 2017), plant remains (Hansson & Bergström 2002), pottery (Hulthén 1984; Bäck, Stilborg & Westberg 2017), combs (Ambrosiani 1981) and beads (Callmer 1977).

[8] Here I am referring to the osteological, archaeobotanical, ceramological, chemical, and geological analysis – to name some of the most common types of analyses.

[9] Graves A76, A79, A44, A52, A77, A12, see Fig. 6.

[10] This is not to say that natural product originating from graves are generally not taken seriously. Different sub-disciplines of archaeological science have in past decades routinely utilized this material for answering questions of dating, environment, diet, production/consumption etc. I refer specifically to the need to take natural products more seriously in the interpretation of burial practices (in particular, within post-cremation practices).

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