

## **INTERARCHAEOLOGIA 6**





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**ARCHAEOLOGY AND ANALOGY**

Papers from the Eighth Theoretical Seminar of the Baltic Archaeologists  
(BASE) Held at the University of Helsinki and Tvärminne Zoological  
Station, Hanko, Finland, November 30th–December 2nd, 2017

Edited by  
**Marko Marila, Marja Ahola, Kristiina Mannermaa and Mika Lavento**

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Interarchaeologia 6 – Archaeology and Analogy

Editors: Marko Marila, Marja Ahola, Kristiina Mannerman and Mika Lavento

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# INTRODUCTION

MARKO MARILA

The *Theoretical Seminar of the Baltic Archaeologists (BASE)* is the biennial meeting of Finnish, Estonian, Latvian, and Lithuanian archaeologists. The BASE tradition started in 2003 when the first meeting was held in Tartu, Estonia. Originally, the seminar series' establishment was motivated by two factors. Firstly, Baltic archaeologists felt that a forum was needed for discussing topics common to Baltic archaeologists. Secondly, as reported by Valter Lang, professor of archaeology at the University of Tartu and one of the organisers of the first BASE, by the 2000s certain changes had taken place in the disciplinary atmosphere of Baltic archaeology. Lang (2005, 7) recounts that "there was an urgent need for new ideas and interpretations in this rather traditional and old-fashioned branch of science in the Baltic countries". In addition to providing a context for discussing common research topics, then, a forum was needed to discuss matters of archaeological theory from a fresh perspective. The chosen BASE themes reflect those relevant in archaeological theorising since the early 2000s: the theme of the first BASE in Tartu in 2003 was culture and material culture, whereas at subsequent meetings topics such as society (Vilnius 2005), memory (Riga 2007), identity (Helsinki 2009), continuity and change – both disciplinary and archaeological – (Tartu 2011 and

Vilnius 2013), and public archaeology (Riga 2015) were dealt with.

Finnish archaeologists' involvement in BASE started with the second meeting organised in Vilnius in 2005. In addition to providing a forum for theoretical discussion with Baltic colleagues, there were also good historical indications for strengthening the relations between Finland and the Baltic countries. Up until World War II, Finnish and Baltic archaeology were intimately intertwined, partly due to the common need for the establishment of post-independence national identity in the aforementioned countries. This turned Finnish archaeologists like J.R. Aspelin and Alfred Hackman to the Baltic region in their search for the origins of the Finns (Salminen 2009). Finnish archaeologist A.M. Tallgren's involvement with Estonian archaeology further strengthened the connection between Finland and the Baltic. Tallgren served as professor of archaeology at Tartu University in 1920–1923. For obvious reasons, the war severed the close ties that had formed between Finnish and Baltic archaeologists for decades to come.

With its eighth iteration, BASE has become more international than ever. In addition to Baltic and Finnish archaeologists, the meeting hosted delegates from Russia, Denmark, Britain, and the United States. The meeting was organised at Tvärminne Zoological Sta-

tion in Hanko, Finland, between 30 November and 2 December 2017, and also included a visit to the new prehistory exhibition of the National Museum of Finland in Helsinki (c.f. Marila 2018). The organising party consisted of staff and doctoral students of archaeology at the University of Helsinki.

The topic of the eighth BASE and subsequently of the sixth volume of *Interarchaeologia*, the dedicated publication series of the BASE since its advent, was 'Archaeology and Analogy'. The theme was chosen as sufficiently broad to allow for the inclusion of papers on a wide range of topics, but the theme was also thought to be sufficiently substantive so as to serve as a concrete enough point of departure for theoretical discussions. The original call for papers reads:

The use of analogies in archaeological interpretation and explanation is extensive and has varied from direct historical analogies or ethnographic analogies to formal or processual analogies. It can even be argued that without the use of comparative analogies much of archaeological knowledge, in the broadest sense of the term, would not even be possible. But analogies have not always been favoured uncritically in archaeology.

We ask, what is the role and relevance of different types of analogies in archaeology today; how do we compare and mix multiple lines of evidence in the production of new archaeological knowledge? We welcome a wide variety of approaches to the use of analogies in the interpretation and explanation of

the archaeological record. Topics might include, but are not restricted to, for example:

- Analogies in combining multiple lines of evidence
- Historical sources, archaeological record, and analogy
- Analogies in interpretation of art in ritual and cosmological contexts
- Analogies as explanations for short-term and/or long-term cultural change
- Temporal and spatial distance and analogies
- Case-studies on the use of analogies.

Analogy does indeed lie at the heart of archaeological reasoning. It has been central not only to the determination of the function of archaeological artefacts, but also to the formation of explanatory hypotheses for formation processes in the past. In the context of Scandinavian archaeology, the use of analogy was identified by Sophus Müller (1884) as the intellectual operation through which possible explanations are introduced by borrowing an idea from one context, such as modern ethnography, and applying that information in the archaeological context under study. The presumed function of an ancient stone axe, for example, derives from its modern analogy (articles by Kunnas-Pusa and Muurimäki, this volume).

Regardless of the central role of analogical inference in suggesting possible explanations for archaeological observations, in the course of the 1960s analogy came to denote a source of inspiration rather than reliable

information. In the treatment of the New Archaeology, regardless of its emphasis on anthropological observation in the construction of archaeological theory, analogical inference came to be regarded as little more than a source of speculation. Because the New Archaeology saw the testing of hypotheses as more important than their devising, for analogical models to be regarded as robust, they would have to be scientifically tested by using the so-called hypothetico-deductive method. An analogical inference was to be considered reliable only if it found support in the physical archaeological record systemically, not only in those materials that the analogy was supposed to explain. This quickly turned out to be an unrealistic requirement as much of archaeological knowledge hinges on analogical inferences that cannot be tested in this fashion.

In retrospect then, New Archaeology's incredulity towards analogy as a viable source of explanation was marginal and short-lived and by the 2000s analogy was again established as the key method of archaeological inference (e.g. Wylie 2002). Today analogy is seen not only as a source for hypotheses but also as the operation by which a hypothesis is identified as worthy of further investigation (Nyrup, this volume). When understood in this way, the validity of an analogy cannot be tested by recourse to a philosophical schema (the hypothetico-deductive method), but its evaluation becomes a prolonged and tacit research process in itself. Furthermore, although the reliability of an analogical model can be evaluated by the breadth of its connections to a body of relevant observations of archaeological data, the robustness of an analogical inference is also a matter of establish-

ing connections within a network of related analogical models. In other words, analogies depend on other analogies. This is equally relevant for the comparison of archaeological artefacts in one context with those from a contemporary one (articles by Gunnarssone and Visocka, this volume), as it is with the use of ethnographic analogies. The meanings of ritual practices that can be inferred through ethnographic analogies also have to be subjected to the analogously inferred meanings of the material culture (Ahola et al., this volume).

Ethnoarchaeology is a good example of the use and usefulness of analogical inference in figuring out the production, use, and symbolic meanings of materials and artefacts in the past, but the matter of analogical inference can be pushed further. In addition to providing physical, systemic, and processual connections, analogy also functions on a metaphorical level. In this case, material metaphors, such as the human body as an archaeological entity (Tuominen, this volume), and conceptual metaphors, such as the attic as a past above – rather than beneath – us (Benjamin, this volume), do not so much target the past context as the object of study, but the conditions of our understanding of the process of archaeological knowledge production itself. Just like an artefact can be seen as a connecting medium between the past and the present, the human body, with due source criticism, can be seen as the common nominator when relating to past individuals' experiences and valuing of their surroundings (Harrison, this volume).

And herein lies the real power of analogy. In addition to suggesting commonalities and continuities between the past and the present,

the task of analogy is also to remind us of the ways in which our experiences, concepts, and cultures differ from those of the past. Just like the body suggests ways in which we are simultaneously similar to and differ from past individuals, thought experiments with concept metaphors can suggest ways in which the very order of archaeological chronology, for instance, can be thought differently. In other words, analogy draws attention to that which easily becomes neglected or forgotten, and in doing so it allows us to approach the past with the sense of care, wonder, and importance that it deserves.

The papers presented at the eighth BASE (see Appendix), nine of which have been published in expanded form in this volume of *Interarchaeologia*, well reflect the richness, diversity, and empathetic dimensions of archaeology as an interdisciplinary field with connections to philosophy, history, ethnography, natural sciences, and artistic practice. It is my hope that the identification and acknowledgement of these disciplinary entanglements also resonate with the ideas that have motivated the Theoretical Seminar of the Baltic Archaeologists for more than 15 years now.

## ACKNOWLEDGEMENTS

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## APPENDIX

Schedule and complete list of papers presented at the eighth BASE.

Thu Nov 30 at 14.00 – Keynote Lecture  
*Analogies and the Process of Discovery*  
Professor Matti Sintonen, University of Helsinki

Thu Nov 30 at 15.00 – Session 1: Analogy and Interpretation (chair: Professor Mika Lavento, University of Helsinki)

*Three Uses of Analogy in Archaeology*  
Rune Nyrup, University of Cambridge

*The Role of Analogy in Evidential Reasoning*  
Kristin Kokkov, University of Tartu

*Archaeology as Analogy*  
Eero Muurimäki, independent researcher

*Moving Pots or Potters? Characterising Regional Traditions and Identifying Material Traits of Neolithic Mobility across the Baltic Sea During the Corded Ware Culture Period*  
Elisabeth Holmqvist-Sipilä, University of Helsinki

Fri Dec 1 at 09.00 – Session 2: Analogy and Material Culture (chair: Marja Ahola, University of Helsinki)

*Analogy and Archaeological Process: Creating Places in the Scandinavian Diaspora c. AD 800–1100*  
Jane Harrison, University of Oxford

*Material Culture and the Concept of Analogy: An Example from the Baltic Bronze Age*  
Algimantas Merkevičius, Vilnius University

*Early Neolithic Prone Burials of the Kubenino Site, NW Russia: Archaeological and Ethnographical Approaches to the 'Norm' and 'Deviant' in Stone Age Mortuary Practices*  
Marja Ahola, University of Helsinki; Ekaterina Kashina, State Historical Museum, Moscow; Kristiina Mannermaa, University of Helsinki

*Cremation Burials in Inhumation Cemeteries in Finland, Russia and Estonia*  
Hanna-Leena Puolakka, University of Oulu

*Pottery Production through Petrographic Data: Example of Kivutkalns and Kļangukalns Hillforts*  
Vanda Visocka, University of Latvia

*Baltic Ware Pot Lids in Latvia*  
Alise Šulte (Gunnarsone), National History Museum of Latvia

13.00 Session 3: Analogy and Society (chair: Marko Marila, University of Helsinki)



*The Use and Abuse of Analogy in the Archaeological Reconstructions of Past Societies*  
Andris Šnē, University of Latvia

*Using Folklore in Archaeology*  
Pikne Kama, Valga Museum

*Putting Meat on the (Concealed) Bones – The What, How, and Why of Using Folklore Analogies in the Archaeology of Folk Religion*  
Sonja Hukantaival, University of Turku

*Function Follows Form? – The Role of Analogies in Discovering the Stone Age*  
Liisa Kunnas-Pusa, University of Helsinki

*Sensing Within: Somatic Practice as Archaeological Analogy*  
Suvi Tuominen, University of Helsinki

*The Miniature Archaeologist*  
Jeff Benjamin, Columbia University

## REFERENCES

- Lang, V.** 2005. Baltic archaeological seminar: an introduction. In *Culture and Material Culture. Papers from the First Theoretical Seminar of the Baltic Archaeologists (BASE) held at the University of Tartu, Estonia, October 17th–19th, 2003*. Ed. V. Lang. *Interarchaeologia* 1, 7–9.
- Marila, M.** 2018. Eighth Theoretical Seminar of the Baltic Archaeologists Helsingissä ja Hangossa 30.11.–2.12.2017. *Muinaistutkija*, 1/2018, 63–67.
- Müller, S.** 1884. *Mindre bidrag til den forhistoriske archaeologis methode*. Aarbøger for Nordisk Oldkyndighed og Historie 1884, 161–216.
- Salminen, T.** 2009. Finland and Estonia in each other's images of prehistory: building national myths. *Estonian Journal of Archaeology*, 13 (1), 3–20.
- Wylie, A.** 2002. *Thinking from Things. Essays in the Philosophy of Archaeology*. University of California Press, Berkeley.

# **THREE USES OF ANALOGY: A PHILOSOPHICAL VIEW OF THE ARCHAEOLOGIST'S TOOLBOX**

RUNE NYRUP

Analogies have an ambivalent status in archaeology. On the one hand, analogies with known societies can suggest rich and compelling interpretations of the past. On the other hand, analogies seemingly rely on the unfounded assumption that the past resembles the familiar. Previous methodological discussions of this challenge have often focused on the adequacy criteria for one specific use of analogies: (i) providing evidential support for interpretations. This paper identifies two further uses: (ii) generating new potential interpretations, and (iii) providing reasons for pursuing an interpretation, i.e. reasons for testing and developing it further. A systematic philosophical analysis of all three uses is presented and it is argued that each of them are subject to different adequacy criteria. Thus, methodological discussions of analogies in archaeology should avoid conflating these three uses. The fruitfulness of this framework is illustrated through a case study involving the interpretation of Pompeian household artefacts.

*Keywords:* analogy; evidential reasoning; hypothesis generation; pursuit-worthiness; Pompeian household artefacts

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## **1. INTRODUCTION**

What legitimate role, if any, analogy can play in archaeology has been the topic of recurring methodological debates (Wylie 2002, ch. 9). Archaeological interpretations almost inevitably draw, if only tacitly, on comparisons with other cultures or societies, whether known through historical sources, anthropo-

logical studies or other archaeological evidence. At the same time, many archaeologists are sceptical of analogies, worrying that they carry with them unfounded assumptions about the uniformity of human culture across time and space (e.g. Freeman 1968; Gould 1980). The problem is not restricted to ethnographic analogies in prehistoric archaeology. For instance, Roman archaeologists have also worried about the widespread use of analo-

gies in interpretations of the Roman world, raising many of the same worries as have been discussed for ethnographic analogies (Allison 1999; 2001; Boozer 2015; Peacock 2016).

As Wylie has argued, the wholesale rejection of analogies is clearly untenable. Attempts to formulate archaeological methodologies which eschew analogies simply end up re-introducing them by another name (Wylie 1982; 2002, ch. 9). While it is easy to highlight examples of misleading analogies, this at most shows that it is the *uncritical* use of analogies which is problematic. What is needed is an improved methodological awareness of how analogies can be legitimately used and of how analogy-based interpretations can be criticised and strengthened—a conclusion echoed by many archaeologists (e.g. Hodder 1982, ch. 1; Stahl 1993; Lightfoot 1995; Ravn 2011). The purpose of this paper is to contribute to the methodological understanding of analogies in archaeology.

By ‘analogy’ in this paper, I mean a specific range of similarities between two phenomena or types of phenomena which is highlighted or conjectured for some purpose in inquiry (where ‘phenomenon’ simply means any object of archaeological interest, including e.g. societies, cultural practices, and artefacts). Thus, the term ‘analogy’ is here used in a broad sense, roughly synonymous to ‘comparison’. While analogy is sometimes defined more narrowly (see Bartha 2010, ch. 2–3 for an overview), my interest in this paper is with the range of purposes that analogies in this broad sense can serve in archaeological inquiry. Notice also that analogies in this sense are almost always partial and selective: an inquirer highlights that two phenomena are similar in some specific respects and to some specific

degree. While any similarity relation can in principle be highlighted in order to draw an analogy, *which* similarities are most relevant to highlight in a given context will depend on what purpose the analogy is intended to serve.

While some archaeologists have distinguished between different uses of analogies (cf. Section 2 below), analogies in archaeology are often discussed as if they presented a single problem. In particular, previous systematic methodological accounts (e.g. Ascher 1961; Smith 1977; Salmon 1982; Wylie 1988; 2002; Currie 2016) have tended to assume that analogies mainly serve the purpose of providing evidential support for interpretations. They have consequently focused on analysing how analogies can best play this role.

By contrast, I shall argue that analogy is a multi-purpose tool. Specifically, I distinguish between three uses of analogy.<sup>1</sup> In addition to (i) providing *evidential support* for an interpretative hypothesis, analogies can also be used (ii) to *generate* new possible interpretations, and (iii) to provide *reasons for pursuing* a given hypothesis, that is, reasons for prioritising a hypothesis for further testing or theoretical development. I will refer to these as *evidential*, *generative* and *pursuit-worthiness* uses of analogy, respectively.

Each of these uses play a legitimate role in archaeological theorising. Crucially, however, they face different potential challenges and should be evaluated according to different adequacy criteria. A hammer can be used for many things. What counts as using it correctly depends on what you are using it for—are you trying to drive a nail into the wall or to knock the plaster off it? Knowing which makes a great difference to whether

you are using the hammer well! Similarly, methodological discussions over the use of analogy in archaeology should recognise that analogies have several possible uses and take care not to conflate the adequacy criteria for different ones.

I will start, in Section 2, by reviewing some precedents in the archaeological literature for the different uses of analogy outlined above. In Section 3, I then provide a philosophical account which distinguishes and analyses the three uses of analogy, spelling out how their adequacy criteria differ. In Section 4, I illustrate how this framework can illuminate the use of analogies in practice by applying it to an extended case study from Roman archaeology, before drawing some conclusions in Section 5.

## 2. DISTINCTIONS IN THE ANALOGY DEBATES

The status of ethnographic analogies was subject to recurrent debates during the twentieth century (Wylie 2002, ch. 9).<sup>2</sup> These debates arose from the rejection of uncritical uses of ethnographic analogy associated with 19th-century theories of cultural evolution and an increased awareness of the diversity and variability of human culture (Wylie 2002, 138–141). However, these debates did not address the exact same problem. Rather, they involved several distinct challenges, involving the three uses of analogy outlined in the introduction.

Some of the debates concern evidential uses. For instance, M.A. Smith argued that because there is an “incredible variety of codes of behaviour ... [which] actuate human conduct” (Smith 1955, 5), we cannot establish any necessary links between “the human activities

we should like to know about”, i.e. what human culture was like in past societies, “and the visible results that survive from them” (Smith 1955, 6). This, in turn, means that “it is a hopeless task to try to get from what remains to the activities by argument” (Smith 1955, 6). While Smith articulated challenges recognised by many archaeologists, few accepted her pessimistic conclusions. Instead, they proposed criteria for distinguishing between more and less reliable evidential uses of analogy (Ascher 1961).

Some of these criteria focused on what kinds of ethnographic sources would be most likely to resemble a given archaeological subject. For example, many argued that societies are more likely to resemble each other if they are close in time and space, especially if connected by a degree of historical continuity, or subject to similar ecological conditions (Clark 1951; Childe 1956; Ascher 1961). Others distinguished between the kinds of conclusions that can be reliably drawn, arguing that inferences about technologically or physically constrained aspects of human culture (e.g. tool making) are more likely to be reliable than those concerning more symbolic or meaning-laden aspects (e.g. religion) (Hawkes 1954). The common idea behind these principles is to identify conditions under which cultural variation is less likely. For instance, if a society is descended from a recent, earlier group and still live under similar conditions, there has been less opportunity for cultural change to take place. Similarly, if an activity is technologically constrained—say, because there are relatively few ways of to construct a given tool—there is a narrower scope for possible variations (see also Currie 2016 on these types of arguments).

While one can discuss the exact principles proposed, this literature made the reasonable point that analogical inferences are not all equally problematic. Thus, undifferentiated scepticism about analogies is unjustified. But this does not, in itself, show them particularly trustworthy either: being better than completely unreliable need not make for very high reliability in absolute terms. Accordingly, many defenders of analogy also warned that the conclusions even of an initially plausible analogical inference should not simply be accepted (Orme 1974, 201). Rather, analogies provide “an alluring inference” (Childe 1956, 56), something which should “spur the prehistorian to further effort and provide him clues for purposive archaeological research” (Clark 1953, 355). This point was also stressed by many New Archaeologists. For example, Binford argued that Ascher’s (1961) criteria are not strong enough for analogy to supply unproblematic interpretations of archaeological data. Instead, “Analogy serves to provoke certain types of questions which can, on investigation, lead to the recognition of more comprehensive ranges of order in the archaeological data” (Binford 1967, 10). Similarly, while Patty Jo Watson recognised that ethnographic analogy is a “wonderful means of generating ... hypotheses” (Watson 1979, 286), she stressed that these “must be tested in other ethnoarchaeological situations and against the archaeological record itself” (Watson 1979, 286).

On this view, then, analogies in themselves do not provide sufficient *evidence* for accepting an interpretation. Rather, they should be used to *generate* potential interpretations for further testing.

Although seemingly quite modest, this use of analogy was challenged by a different objec-

tion (e.g. Freeman 1968; Gould 1980): Given the wide range of variety that can be observed between contemporary cultures, and the fact that culture evidently changes through time, it is not clear that we should expect past societies to be similar to *any* extant societies. As Gould puts it: “Even the strongest analogies ... cannot inform us adequately about prehistoric adaptations that have no modern counterpart” (Gould 1980, 36). If this is the case, relying on ethnographic analogies to generate possible interpretations would effectively blind archaeologists to the possibility that archaeological remains could have been used in ways not exemplified by any known society.

There are two mutually supporting replies to this objection.

First, Ucko & Rosenfeld (1967) pointed out that if the problem concerns a failure to think of the right hypotheses, *limiting* the resources for generating possible interpretations cannot be the solution. Just as archaeologists should not assume that past societies are similar to presently existing ones, the opposite assumption, i.e. that past societies are in no way similar to present ones, is equally unwarranted. Trying to avoid analogies usually ends up implicitly relying on interpretative assumptions which, if anything, tend to limit interpreters’ horizons even *more* than analogies (Ucko & Rosenfeld 1967, 150–153). Instead, Ucko & Rosenfeld recommend that archaeologists actively use ethnographic parallels to seek out as wide a range of potential forms of cultural expression as possible. The purpose is “to widen the horizons of the interpreter” (Ucko 1969, 262). Although this cannot guarantee to generate the right interpretative hypotheses, seeking out analogies supplies *one* useful tool for overcoming problems of limited imagina-

tion (though not necessarily the only one).

Second, Wylie (1988, 146–147) argues that even when we have reason to believe that no currently known analogue exists for a given past society, analogies can still be a useful starting point for formulating hypotheses about *how* it differs. Multiple analogies can be adapted and combined by considering how the past society being investigated could resemble different analogues in different respects. As she points out, Gould (1980, 30–31) himself provides an example of this when he suggests that the hunting practices of humans prior to the adoption of fire might resemble that of non-human predators. Even if this hypothetical society does not resemble any currently existing human or animal group, combining analogies with both provides a productive starting point for thinking beyond the already known. (Currie [2018, ch. 8] calls this the “exquisite corps” method of historical reconstruction.)

The claim that analogies are effective for generating new hypotheses gives rise to a third worry, pulling in the opposite direction: that archaeologists might generate *too many* possible interpretations. This worry is raised by Orme (1974) in discussing the views of French archaeologists Annette Laming and André Leroi-Gourhan.<sup>3</sup> Laming and Leroi-Gourhan granted that analogies can be used to demonstrate a few vague generalisations (e.g. “primitive people are preoccupied with the sacred”). However, due to the diversity of possible ethnographic parallels, they objected that “[a]ny further use of analogy leads only to wild speculation”, since there are “no means of selecting probable analogies from the great diversity of possible ones” (Orme 1974, 204–205). The issue raised here,

then, is that the ethnographic record provides too much leeway for generating hypotheses, risking archaeologists become distracted with speculating about merely possible interpretations without the ability to determine whether they are probable or not.

It might be thought that the problem of distinguishing probable analogies from merely possible ones can be solved by submitting them to testing. However, if there are too many possible alternatives, testing all of them becomes unfeasible. As Merrilee Salmon (1976; 1982, ch. 3–4) and Bruce Smith (1977) argue, archaeologists need to decide which hypotheses to prioritise for further testing: “scientists, including archaeologists, do not consider all logically possible hypotheses, but initially distinguish between those that are reasonable and those that are not” (Smith 1977, 604). When deciding which hypotheses to consider further, Smith and Salmon argue, archaeologist often rely on analogies. For instance, Salmon (1982, 78) points out that Binford does not merely use analogies to generate hypotheses but also to help “make decisions as to how to invest research time in hypothesis testing” (Binford 1972, 57). How do analogies help with this? Salmon and Smith assume that these decisions are made on the basis of plausibility judgments:<sup>4</sup> “The alternative hypotheses which could account for the observed phenomena were so initially implausible that they were not even mentioned” (Salmon 1976, 379). They argue that ethnographic analogies can be used to increase the plausibility of a hypothesis. This provides justification for archaeologists to consider analogy-based interpretations in the first place: such interpretations will be supported by at least one plausibility argument, namely the analogy (although this has to be weighed

against other plausibility considerations).

Salmon's and Smith's accounts are important as they highlight a third use of analogies beyond (i) providing evidence for the truth of a hypothesis and (ii) generating new potential interpretations, namely (iii) to provide reasons for prioritising the pursuit of certain hypotheses. Of course, on their account, the adequacy criteria for (ii) and (iii) are essentially the same as for (i): analogy-based hypotheses are pursuit-worthy, and worth generating in the first place, because they are "plausible"—which simply means that there is some initial evidence in their favour, though not enough to accept them outright. In the next section, I will outline an account which instead distinguishes the adequacy criteria for these three uses. In particular, I will argue that while Salmon and Smith are right that there are often good reasons for archaeologists to pursue analogy-based interpretations, these reasons go beyond plausibility arguments.

### 3. PHILOSOPHICAL ANALYSIS: USES OF ANALOGY AND THEIR ADEQUACY CRITERIA

Having highlighted some precedents in the literature, I now want to present a systematic philosophical account of the different uses of analogy and their adequacy criteria. For the purposes of this analysis, I will consider the different uses separately. However, as will be illustrated in Section 4, in practice, several uses of analogy will often be deployed in mixed or interweaving ways.

#### 3.1. Direct Evidential Uses

Perhaps the most straightforward use of analogies is to provide evidence for the truth of a

hypothesis, or more realistically, evidence for which a hypothesis is most likely to be approximately correct.<sup>5</sup> The adequacy criterion for this use is correspondingly simple, namely whether the analogy highlighted provides good evidence for the likeliness of the hypothesis.

Many controversies surrounding evidential uses of analogy stem from the fact that analogies clearly do not always provide such evidence. On the most simplistic construal, an argument from analogy consists in noticing that the archaeological *subject* that we want to interpret is similar to some independently known *source* with regards to a number of features, *A, B, C...* on the basis of which one infers that the subject has a further similarity, *X*, known to exist in the source. As most archaeologists recognise, the uncritical application of this inference does not in general provide good evidence. However, there are several strategies which archaeologists can, and often do, exploit to move beyond this uncritical use of analogy. These rely on combining analogies with other relevant pieces of supporting evidence (Ascher 1961; Smith 1977; Salmon 1982, ch. 4; Wylie 1988, 2002, ch. 9; Currie 2016).

The simplest such strategy is to find independent evidence that the source and subject are likely to be similar with regards to the features of interest. Ascher's (1961) criteria aim at this strategy. For instance, if two seemingly identical artefacts are found on the same site and dated to the same time period, it is usually reasonable to suspect they were used for a similar purpose—or at least, it is *more* reasonable to suspect than if they were found in completely different parts of the world, from widely different time periods and cultural contexts.



While this direct strategy is useful for evaluating the plausibility of analogical inferences, the above example also illustrates the limits of the direct evidential strategy. People often find multiple uses for the same tool. Even if we were certain, say, that three identical-looking cups found in the same house were used by the very same person (i.e. a case of maximal proximity and continuity), one cup might still have been a drinking vessel, another used for throwing dice, and the third to hold paint (as Allison (1999, 62–63) suggests might have been the case for the so-called *fritilli* found in Pompeii). As Currie (2016, 91) argues, evaluating a direct analogical argument will depend on knowledge about which features of a specific case are likely to be stable through time and space, rather than on abstract, general criteria such as “proximity” or “continuity”. In many cases, when this kind of specific background knowledge is not available, the direct strategy should be supplemented by other forms of evidential reasoning.

### 3.2. Indirect Evidential Uses

Indirect evidential uses of analogy proceed in two steps.<sup>6</sup> The first step involves investigating the source domain in order to formulate a model of how its features correlate and depend on each other. For instance, we might study how a blacksmith’s hammer is used in a contemporary smithy, either through experimental archaeology or an ethnoarchaeological study. From this study, we construct a model of the kinds of wear and residue this tends to produce on the hammer, what other items are typically found in its vicinity, and so on. This model provides a potential interpretation of how hammer-like objects *can* be used, but not whether this account applies to any given ar-

chaeological subject that we want to interpret.

The second step is to look for positive evidence that the model in fact applies to the archaeological subject. This is done by checking whether we can observe the kinds of features we would expect if the model did apply, as well as checking that there are no features which would be unlikely according to the model. If the hammer displays the same patterns of wear that we observe in the source context, this provides some evidence for this interpretation, whereas evidence of intricate decorations in precious metals would probably count against it being a regular blacksmith’s tool. (This is of course a simplified example for the purpose of illustration. In most realistic settings, these inferences would take into account also further lines of evidence, incorporate taphonomic models of how features are likely to be preserved in particular contexts, and so on.)

Notice that in this evidential strategy, the analogy does not in itself provide evidence of similarities. Rather, analogy is used to indicate what kinds of features we would be likely to find *if* a given model applies to the subject domain. Thus, the adequacy criterion for indirect evidential uses of an analogy concerns the extent to which we are able to reliably derive testable regularities and dependency relations from the source domain. The stronger these relations are, the stronger the evidence provided by indirect evidential uses of analogy is. In the limiting case where we know that there is only one possible way to produce a given feature, this can provide very strong evidence in favour of an interpretation. For instance, if we know that a certain pattern of cut marks is *only* likely to occur if a very specific technique is used to carve up the ani-



mal, finding animal bones with those specific cut marks would be strong evidence that this technique was used by the people who butchered the animal.

In most cases, however, we cannot be sure that there is only one possible way to produce a given pattern. As Hawkes (1954) argued, especially those features of past societies which involve cultural meaning and significance are usually not sufficiently constrained for the indirect strategy to provide strong evidence on its own. There will often be several other possible models which would equally lead us to expect the same features (a phenomenon sometimes called 'equifinality' in archaeology, or 'underdetermination' in philosophy).

The solution, again, is to combine multiple strands of evidence. In addition to direct analogical arguments, a third strategy involves ruling out alternative interpretations, sometimes known as eliminative inference. This strategy will often involve a generative use of analogies.

### 3.3. *Generative Uses and Eliminative Inference*

Whereas evidential uses of analogy aim to provide evidence for the (approximate) truth of an interpretation, in generative uses the analogy is rather used to formulate a new potential (though not necessarily particularly plausible or likely) interpretation. The adequacy criteria for generative uses depend on the purpose for which one needs to generate new hypotheses. There are at least two different reasons for generating new possible interpretations. First, one may simply be looking for a new working hypothesis, for instance as a potential interpretation for a newly discovered site or previously unknown type of artefact or when a previously accepted inter-

pretation is overturned. Here, the purpose of generating new interpretations is to investigate them further. Thus, in this context, the adequacy criteria for generative uses of analogy coincide with those for pursuit-worthiness uses, which I discuss in Section 3.4 below.

The second purpose for generating new hypotheses is to strengthen an eliminative inference.<sup>7</sup> To see how this affects the adequacy criteria for generative uses, let me first quickly outline the logic of eliminative inferences (Reiss 2015). An eliminative inference can be summarised in the following inference schema:

- [1] The archaeological subject, *S*, has features *A*, *B*, *C*, ...
- [2] If *H* were an accurate interpretation of *S*, we would expect to see *A*, *B*, *C*, ...
- [3] We have evidence allowing us to reject all (or least most/many/some) alternative interpretations which could also account for *A*, *B*, *C*, ...
- [4] Therefore, *H* is likely to be the correct interpretation of *S*.

The crucial step here is [3]. The more alternative interpretations we can reject, the stronger the inference.<sup>8</sup> Whether this is possible depends on two types of considerations. First, whether there is sufficient evidence to reasonably reject the alternative hypotheses considered; and, second, whether as many serious competitors as possible have been considered, and we have not simply failed to think of some plausible alternative. This is of course very difficult to guarantee, as it would ideally require that we evaluate the entire range of possible hypotheses, including those no one has yet thought of. In philosophy of science, this is sometimes called the "problem of unconceived alternatives" (Stanford

2006). It corresponds to Freeman's (1968) and Gould's (1980) worry that archaeologists might fail to even consider the right hypotheses. It is in addressing this worry that generative uses of analogies become relevant.

The variability of human culture makes the problem of unconceived alternatives particularly pressing. It is often reasonable for archaeologists to suspect that there are many plausible interpretations which could account for the same evidence. Thus, a lack of plausible contenders might simply indicate a lack of imagination on the part of the archaeologist, rather than a strong argument in favour of an interpretation. However, although it is often difficult to determine how wide a range of alternatives has been ruled out (in absolute terms), one can still *strengthen* an eliminative inference (in comparative terms) by making a serious effort to rule out as many competitors as possible. This will involve making a serious effort to generate as many alternative interpretations of the same evidence as practically possible. It is to this end that Ucko & Rosenfeld (1967) advocated using analogy. As explained in Section 2, analogies provide one important means, though not necessarily the only one, of generating possible hypotheses.

An example is Ucko's (1969) review of the many different kinds of human funerary practices and their relation to religious ideas. The paper primarily uses these to a critical purpose, namely to argue that many common interpretations of funerary remains seem to reflect modern or western prejudices. For instance, Ucko (1969, 265) cites a number of counter examples to the assumption that elaborate funeral rites indicate beliefs in an afterlife. In this case, using analogies to generate plausible alternatives serves as a critical

tool for re-evaluating the strength of previously accepted interpretations. But this generative use of analogies can also serve a more constructive role, since it highlights the kinds of alternative interpretations which archaeologists would need to find evidence against in order to strengthen the positive case for a given interpretation. While it is difficult to completely avoid the general worry that one has failed to consider some possibilities, ruling out a wider range of alternatives still provides one productive strategy for strengthening the evidential case for an interpretation.

Crucial to notice is that when analogies are used generatively in the context of an eliminative inference, their adequacy criterion differs from those discussed above. In contrast to direct evidential uses of analogy, which are strengthened by evidence that the source and subject are likely to be similar, for the generative use of analogies it is instead *range* and *variability* that matters. As Ucko & Rosenfeld state: "The more varied and the more numerous the analogies that can be adduced, the more likely one is to find a convincing interpretation for an archaeological fact" (Ucko & Rosenfeld 1967, 157). Thus, it is more important to generate analogies which are likely to *differ* from those already considered, rather than ones which we think are likely to resemble the subject of interpretation. Focusing on those cases that seem most likely to be similar risks being counter-productive, since it will tend to restrict attention to a narrower range of possibilities. This is not to say that archaeologists should actively try to generate the most implausible interpretations they can think of. If a hypothesis is completely implausible, we presumably already have good reasons to reject it. However, the guiding criterion when using

analogies to generate alternative interpretative hypotheses for the purposes of eliminative reasoning should be range and variability, rather than likelihood.

### 3.4. Pursuit-Worthiness Uses

In pursuit-worthiness uses, an analogy is used to identify hypotheses which are worth pursuing further. This includes cases (mentioned at the beginning of Section 3.3) where analogies are used to generate new interpretations for the purpose of further pursuit, as well as cases where an analogy is used to argue in favour of pursuing an already existing interpretation.

To pursue an interpretative hypothesis is to investigate whether, or to what extent, it applies to a given archaeological subject, often through one of the evidential strategies outlined above. But developing an interpretation and testing it, or its competing alternatives, takes time and effort. Archaeologists (individually and as a discipline) need to decide where to prioritise their resources. To have *reasons* for pursuing an interpretative hypothesis is to have reasons for prioritising it for further investigation.<sup>9</sup>

As Salmon (1982) and Smith (1977) point out, analogies are often used at this stage of inquiry. However, they tend to construe reasons for pursuit in terms of plausibility judgments, thus reducing the adequacy criteria for pursuit-worthiness uses of analogy to that of evidential uses. Here, I will outline some further factors that are relevant to evaluating the pursuit-worthiness of a hypothesis and explain why analogies are often conducive to these factors.

Notice, first, that increasing the plausibility of a hypothesis does not always give us more reason to pursue it. Of course, if we already

have good reasons to regard a hypothesis as completely implausible, it would probably be a waste of time to pursue it further. If someone were to propose without further evidence, say, that Iron Age Britons had extensive trading links with South America, most archaeologists would probably not regard it as worth serious attention. On the other hand, as Salmon (1982, 78–79) also notes, if a hypothesis is already extremely well supported, testing it any further might equally be a waste of time. For instance, the hypothesis that the forts along Hadrian's Wall were occupied by soldiers from the Roman army around the second century CE is overwhelmingly plausible. But exactly because it is so plausible, there is little reason to pursue *this* particular question further. Instead, the interesting questions are those we remain more uncertain about, such as where the soldiers came from and how they interacted with the local population. On the other hand, if new evidence came to light which suggested that some forts might not have been occupied by Roman soldiers after all—say, if a new textual source were discovered which claimed that local rulers also constructed and occupied forts based on the Roman design—this might make it more interesting to re-examine the evidence for the previously received interpretation. The new evidence makes the previous interpretation *less* likely but *more* pursuit-worthy.

More generally, the pursuit-worthiness of an interpretation depends on at least two kinds of considerations: (i) *testability*, whether pursuing the hypothesis is likely to yield relevant and reliable evidence, and (ii) *interest*, what could potentially be learned from pursuing the hypothesis and how interesting this would be. Let me elaborate on each of these.

Testability concerns the types of questions we can expect to reliably answer given the available or potential evidence. For example, if a site yields a large quantity of well-preserved pottery sherds, this can be a good reason to focus on the kinds of questions these might answer: what kind of pottery did the inhabitants prefer? Was it imported or produced locally? What kind of food did it contain?—even if most of the hypotheses we can think of regarding these questions are not initially very plausible. In fact, having such extensive data can be a reason for testing hypotheses already suspected to be false, as the data might enable the researcher to rule them out conclusively, thus clearing the field before considering further hypotheses.

Interest concerns what we could potentially learn from pursuing a hypothesis and how interesting or significant it would be to learn those things. While questions about the distribution, dating and physical attributes of artefacts are often easier to answer, more significant questions usually concern the cultural or social structure of past societies. What kind of trade or other interactions took place between Roman soldiers and the local population in the provinces? Were Iron Age societies dominated by political elites? How widespread was a belief in an afterlife? Even if questions such as these are more difficult to answer, they are interesting enough that archaeologists will often spend considerable efforts trying to answer them, or even just to clarify to what extent we are able to answer them. Importantly, for many of these questions, finding evidence against a hypothesis can be as interesting as confirming it. For instance, when excavating a farmstead in Britain dating to the Roman occupation, it

would both be interesting to find evidence of trade with nearby Roman forts, but so would a complete *lack* of such evidence (assuming, at least, that we would expect some traces of such trade to have been preserved). Both outcomes would tell us something interesting about the interactions between Roman soldiers and local rural populations.

Given this account of pursuit-worthiness, let me return to the question of whether there are any reasons for archaeologists to pursue interpretations based on analogies with known societies. Why not, for instance, start with hypotheses formulated independently of any currently known society? Notice, we cannot simply say it is because only analogy-based interpretations are plausible. Taking seriously the worry that past societies might not resemble anything we currently know, we cannot simply say that the latter kinds of hypotheses are implausible. Rather, the pursuit-worthiness of analogy-based interpretations is better explained in terms of the two considerations highlighted above.

Take testability first. In general, to test a hypothesis, we need a good model of the kinds of features we would and would not expect to find if it were true. As explained in Section 3.2, one way to build and validate such a model is to study known source contexts where the interpretation does apply. By basing interpretations on analogies with known source contexts, we have a readily available strategy for developing such models. Since analogy-based interpretations tend in this way to be more testable, it can be reasonable to start by pursuing these before trying to develop hypotheses that go beyond the already known.

Second, regarding interest, notice that archaeology often aims to answer comparative

questions about human culture, that is, questions about how human culture varies across time and space. Binford, for one, stated that anthropologically oriented archaeology is “striving to explicate and explain the total range of physical and cultural similarities and differences characteristic of the entire spatial-temporal span of man’s existence” (Binford 1962, 217, *italics suppressed*). An analogy-based interpretation automatically addresses such questions, since it explicitly concerns the extent to which the source and subject are similar or different. Importantly, learning about cultural *dissimilarities* can in itself be an interesting discovery. Thus, even if we were to find evidence against most of the similarities suggested by an analogy, we would still learn something relevant, namely how the two contexts differ. By contrast, purely hypothetical interpretations, not based on analogies with known societies, do not automatically provide the opportunity to answer comparative questions of this type.

Taken together, these considerations suggest that analogy-based interpretations often strike a favourable balance between interesting and testable questions and therefore have a high degree of pursuit-worthiness. This is not to say that analogies should *always* be prioritised for pursuit. However, it does explain why it is in many cases reasonable for archaeologists to investigate interpretations based on analogies with known societies.

### 3.5. Summary

Let me briefly summarise the above analyses. There are a number of distinct uses of analogy, each of which can play a legitimate role in archaeological theorising. Importantly, these different uses of analogy should be evaluated

according to distinct adequacy criteria. Figure 1 provides a typology summarising each of these uses and their respective adequacy criteria.

## 4. ANALOGY IN PRACTICE: POMPEIAN HOUSEHOLD ARTEFACTS

While the previous section analysed the different uses of analogy separately, in order to highlight their differences, they are not mutually exclusive. In practice, archaeologists will often deploy several different kinds of analogy in mutually supporting ways. In this section, I discuss a concrete case study to flesh out the somewhat abstract framework presented above. This will illustrate, first, how the different uses of analogy can occur in practice and, second, how the framework can help clarify the methodological assessment of analogies.

Specifically, I will look at Allison’s (1999; 2001; 2009) discussion and use of analogies in relation to the interpretation of Pompeian household artefacts. As mentioned, interpretations in Roman archaeology often rely on analogies which are subject to many of the same worries as ethnographic analogy in prehistoric archaeology (Allison 1999; 2001; Boozer 2015; Peacock 2016). There are broadly two kinds of sources for these analogies: first, modern or recent (usually European or Western) societies; and, second, other parts of the Roman world, often known through textual sources. In the case of modern analogies, the problem is much the same as for ethnographic analogies. Because of the vast temporal distance between the source (modern Europe) and the subject (the Roman world), and the many cultural changes we know to have

occurred through the last two millennia, Roman archaeologists are often sceptical of analogical inferences based on modern analogy. Similarly, while analogies with other parts of the Roman world may appear less problematic, these have also been criticised. As Allison points out, since “the term ‘Roman culture’ must surely stand for what was a very multicultural society spanning many continents and centuries” (Allison 1999, 57), uncritically using textual sources as a basis for interpretations will often rely on unfounded assumptions of similarity within the Roman world.

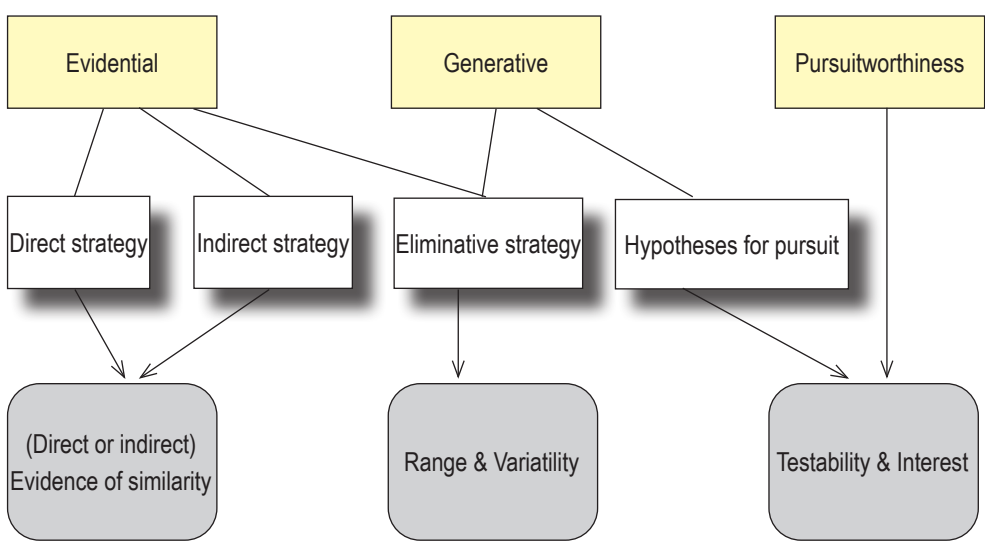
Allison criticises both kinds of analogies in the interpretation of Roman artefacts. But although she highlights many problematic evidential uses of analogy in previous interpretations, the interpretations she proposes in their stead often seem equally based on analogies. While Allison is careful to stress that she does not recommend a wholesale abandonment of analogies, she does not give a systematic account of why her use of analogy is more legitimate than those she criticises. After describing three examples from Allison’s work and her own methodological remarks, I show how the framework presented above can help elucidate her methodological stance.

#### 4.1. Allison’s Criticism and Use of Analogy

The first example involves Allison’s (1999, 66–67) criticism of the modern Italian term *‘forma di pasticceria’* (pastry or confectionary mould) as a label for certain small bronze vessels found in Pompeii. She notices that this label “suggests analogies” with moulds used in European pastry making or possibly the moulds which Victorians used to shape jelly. According to Allison, this interpretation “serves to link Pompeian eating habits

with those of the modern European world” (Allison 1999, 66). However, she argues, there is little evidence for this interpretation. Instead, she suggests that they might have been used for ablutions, more specifically for pouring water over oneself, “in a manner not dissimilar to that of bathing women in the wall-painting in the bath complex” (Allison 1999, 66) of one Pompeian house. In favour of this interpretation, she mentions that some of these “pastry moulds” are found in the vicinity of large basins independently believed to be used for ablutions. Furthermore, some of the bronze vessels are shaped as sea-shells, with a scoop-like form “suitable for pouring water over oneself” (Allison 1999, 66).

The alternative interpretation Allison proposes refers explicitly to a scene in a wall-painting in Pompeii. The spatial and temporal proximity of the source and subject—both the bronze vessels and the wall-painting were present in Pompeii at the time of the eruption of Mount Vesuvius—might give some support for a direct analogical inference. However, the analogy between the two is not perfect: as she notices in a footnote, in the painting “water is being poured from a jug by an assistant or companion” (Allison 1999, 74, note 7), rather than using a shell-shaped scoop. The proposal that their “scoop-like” form makes this vessel suitable for ablutions seems instead to rely on other examples of scoops being used in that way. Allison’s interpretation thus seems to combine the analogy drawn from the wall-painting with analogies to other, familiar bathing practices either from contemporary or historically known contexts. This is thus an instance of the method of combining multiple analogies to generate novel interpretations (cf. Wylie 1988; Currie 2018, ch. 8).



**Figure 1.** Typology summarising the three uses of analogy, their sub-types and respective adequacy criteria. Lines indicate sub-types, arrows point to adequacy criteria. *Illustration by Rune Nystrup.*

A second example, also involving modern analogy, concerns the type of pottery known as *terra sigillata* or samian ware, a distinctive type of red, glossy pottery found across the Roman world, often assumed to have been used as tableware. Several of the samian ware bowls recovered from Pompeii contained food remains, probably left behind when the residents fled the eruption. Interestingly, each bowl contained a single type of food (e.g., a whole bowl of plums, one of olives, etc.). As Allison argues, this tells against the interpretation that the bowls functioned as individualised dining set, where each diner was served their own bowl of food. She suggests that the latter interpretation was based on analogies: “Assumptions that Romans ate at the table with individualised utensils that were used as sets may be based rather on funerary practices or on modern analogy than on contextual

evidence” (Allison 2009, 24). She also points out that Pompeian dining rooms did not have space for tables large enough to facilitate buffet-style eating. Instead, she proposes that “[t]his might imply communal eating habits, where the bowl is passed amongst the diners” (Allison 1999, 69). This style of eating, she notices, was “common in much of Europe, and also in the United States, until at least the mid-18<sup>th</sup> century” (Allison 2009, 24).

A final example involves a type of table called a *cartibulum*. The Roman writer Varro mentions that when he was a boy this type of table, described as an “oblong stone table with a single support”, used to stand in the forecourts of houses with bronze vessels on or around it (Allison 1999, 61). On the basis of this description, Daremburg & Saglio (1881–1904) used tables found in the forecourts of Pompeian houses as illustrations of *cartibula*—an



instance of textual analogy. However, the Pompeian tables found in the forecourts often have two or three feet and are circular rather than oblong, while tables which fit Varro's description better are often instead found in the gardens of Pompeian houses. In addition to these discrepancies, Allison furthermore points out that Varro was a child in the late Republican period more than a century before Pompeii was buried. One cannot assume that the cultural practices described by Varro are representative of all of the Roman world, or even all of Italy, across this time period. Instead of uncritically assuming a concordance between textual sources and the Pompeian objects, Allison suggests that archaeologists should focus on assessing the relationships between the two. For instance, she wonders whether the tables found in the Pompeian forecourts could "conceivably indicate a Pompeian élite who were preserving, or mimicking, behaviours of the Roman élite from a bygone republican era to establish their credentials as Roman élites?" (Allison 1999, 62). However, she also worries that such an interpretation may be largely based on analogies with British colonial behaviour, rather than something which can be "validated through critical appraisal of textual information" (Allison 1999, 62).

In all three examples, Allison clearly relies on analogies to propose alternative interpretations (although she tends to reserve the term 'analogy' for the problematic interpretations she criticises). Now, Allison is careful to stress that she is not arguing that all analogy-based interpretations are wrong (Allison 1999, 72). As her own interpretative practice demonstrates, she clearly regards some uses of analogy as legitimate. While Allison does not provide a systematic methodological account,

she does make some suggestive remarks. One paper contains the following characterisation of her approach: "Interrogation of the material evidence requires critical readings, and re-readings, of related textual evidence and cross-cultural ethnographic comparisons, not to directly interpret household practices but to expose the biases in our interpretations" (Allison 2009, 28). Along similar lines, she argues in an earlier paper that modern analogies "can at best be used to explore relationships between modern and ancient behaviours rather than to explain them" (Allison 2001, 194). She warns, reasonably, against smuggling assumptions into the primary data, for instance by giving items labels on the basis of analogies which imply specific functions, as in the case of the so-called *forma di pasticceria*. Rather, it is only once analyses of the material culture "have been rigorously carried out" that "their relationships with analogical material, textual or cross-cultural, can be explored" (Allison 2001, 201–202).

The methodology suggested, then, is that analogies should be used to 'interrogate' the evidence in order to expose biases. Furthermore, archaeologists should 'explore' the relationship between the archaeological evidence and analogies from textual or modern sources. But analogies should not be used to 'directly interpret' or 'explain' the evidence. However, as noted, Allison does seem to rely on analogies when proposing alternative interpretations. Does this indicate that her interpretative practice conflicts with her explicitly stated methodology? In the following, I will show how distinguishing different uses of analogy in Allison's work, along the lines proposed in Section 3, can help elucidate her methodological recommendations.



#### 4.2. *Generating and Pursuing Interpretations of Pompeian Artefacts*

The target of Allison's criticisms is often uncritical direct evidential uses of analogy, i.e. instances where the interpretation suggested by an analogy is simply assumed to be true without independent evidence of similarity. For analogies with modern society there is clearly a lack of direct evidence of similarity. Even for textual analogies, such as the one derived from Varro's descriptions of *cartibula*, the direct analogical inference from Republican Roman practices to Pompeii is not particularly trustworthy, as Allison highlights.

Sometimes, her criticism can instead be understood in terms of the indirect strategy, either because she highlights a lack of indirect evidential support (features that we would expect to see if the interpretations were true) or because she points out features that do not fit the proposed interpretations—for example, the fact that the 'pastry moulds' were found near water basins, that the samian ware bowls contain a single type of food, or that the tables have more than one single support. While none of this decisively proves the interpretations wrong, it at least shows them more doubtful than otherwise assumed. We can thus interpret Allison's criticism of analogy as pointing out ways in which these interpretations do not live up to the adequacy criteria for either direct or indirect evidential uses of analogy.

However, her own use of analogies does not seem to provide a strong direct or indirect evidential case for the alternative interpretations she proposes either. For one thing, her own interpretations are often based on modern analogies (or a combination of multiple analogies, in the case of the 'scoop-like' bronze vessels), where concerns about a lack

of direct evidence also apply. Although her proposed interpretations avoid the discrepancies that she highlights for previous interpretations, her arguments do not seem to support a particularly strong positive argument in favour of her interpretations. For instance, she does not highlight any strong dependency relations between the shape of the bronze vessels and bathing, as would be required for a stronger indirect evidential use of analogy. Allison seems aware of this, and accordingly tends to present her conclusions tentatively (e.g., the evidence surrounding the samian ware bowl "might imply" communal eating).

Her remarks that analogies can be used to expose biases (Allison 2009, 28) might suggest that she is instead using analogies generatively in the service of an eliminative inference. This does capture some aspects of Allison's use of analogies. Citing the fact that eating from communal bowls was common through much of history reminds us that there are other, serious alternatives to the assumption that samian ware was used as individual dining sets. Recall that, for generative use of analogy, the likeliness of this alternative is not crucial. There is little reason to think that Pompeian dining habits are more likely to resemble seventeenth-century Europe practices rather than twentieth-century ones (and Allison does not suggest so). Furthermore, mentioning buffet-style dining only to quickly reject it can be seen as a small step towards strengthening the eliminative argument for the 'communal bowl' interpretation.

However, Allison does not attempt the kind of broad-ranging generation of alternatives which Ucko & Rosenfeld (1967) recommend. Thus, her generative use of analogies primarily functions to criticise the 'individu-

alised dining set' hypothesis, rather than as a strong eliminative argument for her alternative. Again, Allison seems aware of this and primarily takes her argument to show that the material and textual evidence should be re-examined in order to investigate whether the alternatives she proposes can be supported. In my terminology, then, she primarily takes her argument to provide reasons for pursuing these new interpretations, rather than reasons for accepting them.

What kinds of reasons does she offer for pursuing these interpretations? One factor is simply that by throwing doubt on existing interpretations, she makes it plausible that more can be learned from re-examining the evidence. But consider also her recommendation that archaeologists should "explore the relationship" between the archaeological material and the suggested analogies. As argued in Section 3.4, many valuable archaeological insights concern these relationships, i.e. the similarities and differences we can find between different times and places, rather than exactly which interpretation best fits the subject. For example, Allison's analogy with the dining habits of seventeenth-century Europeans not only provides a possible interpretation of Pompeian samian ware. It also raises deeper questions about how similar or different Roman culture(s) are to more recent periods, and ultimately to our own. Even if all of the analogies Allison consider ultimately prove unsuccessful, learning that they *fail* to capture Pompeian dining habits still provides interesting insights into these deeper questions: in that case, we would have learned more about how dissimilar Roman practices can be to anything we are familiar with. Similar points apply to analogies within the Roman world:

investigating to what extent domestic life in Pompeii in the early imperial period was similar (or different) to that described by Roman authors can reveal interesting insights about the extent to which 'Roman culture' was a uniform or stable phenomenon.

Notice, finally, that Allison does not regard all of her suggested analogies as equally pursuit-worthy. In particular, she worries that it may not be possible to say much about the idea that Pompeian elites were mimicking earlier republican practices on analogy with the practice of British colonial elites. If, as Allison suggests, this interpretation is simply not one which we could find evidence for or against in the existing textual or material evidence, it would not be worth pursuing. In my terms, the interpretation is lacking in testability. As mentioned, while there are often good reasons to pursue analogy-based interpretations, not all analogies are worth pursuing.

## 5. CONCLUSION: BETWEEN SCEPTICISM AND OPTIMISM

Blanket scepticism about analogies is untenable. By exploiting relevant pieces of background knowledge and supporting evidence, analogies can often be used to make reasonable inferences about the past. However, even comparatively strong evidential uses of analogy will often only support relatively tentative conclusions. Some aspects of the past, such as when and how the destruction of Pompeii took place, we can and do know a lot about. Other questions, such as those which Allison seeks to address about domestic life in Pompeii, are not as easy. While her criticisms of the received interpretations are plausible, the analogy-based alternatives she proposes still

remain tentative. It is tempting to conclude that analogies here serve as little more than idle speculations. If we only evaluate analogies against the evidential criterion, they will often appear not fit for purpose.

By recognising that analogy can play different roles and that these should be evaluated according to different adequacy criteria, this paper seeks to vindicate a broader range of uses for analogies in archaeology. First, they can be used to generate alternative interpretations, allowing archaeologists to probe the strength of received interpretations. Second, rather than opening the door to unrestricted speculation, analogies can help archaeologists identify those hypotheses that are worth pursuing further. When facing several possible interpretative hypotheses, analogies will often suggest hypotheses with a high potential for learning more about archaeologically interesting questions.

Often, pursuing an interpretation will still fail to confirm it. Archaeologists will instead discover evidence against it, or even just that the evidence is more ambiguous than previously thought. This may still seem a rather pessimistic account of analogies. However, for many of the questions highlighted above, such as how culture varies across different times and places, even this kind of negative insight can be valuable. Even if progress will often mainly consist in uncovering biases in previous interpretations and in deepening our understanding of the uncertainties and ambiguities we face when trying to interpret the past, these insights can still have a genuine value, worth pursuing for their own sake. As Joan Gero (2007) has argued, archaeologists should strive to “honour ambiguity” in their interpretations, rather than papering it over.

Learning about the limits of our knowledge deepens our understanding of our own relationship to the past: it helps us appreciate how different our own culture may be from the past societies we would otherwise be tempted to identify with.

This does not mean that archaeologists should relinquish the goal of learning as much as possible about the past, or that they should deliberately introduce unnecessary ambiguity or uncertainty into their interpretations. On the contrary, the only way to learn about the limits of our knowledge is to seriously attempt to learn as much as possible. In this paper, I have highlighted the many different ways that archaeologists can use analogies to discover what life was like in the past, and what we can reasonably claim to know about it.

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## REFERENCES

- Achinstein, P. 1993. How to defend a theory without testing it: Niels Bohr and the "logic of pursuit". *Midwest Studies in Philosophy*, 18, 90–120.
- Allison, P. 1999. Labels for ladels: Interpreting the material culture of Roman households. In *The Archaeology of Household Activities*. Ed. P. Allison, Routledge, London, 57–77.
- Allison, P. 2001. Using the material and written sources: Turn of the millennium approaches to Roman domestic space. *American Journal of Archaeology*, 105, 181–208.
- Allison, P. 2009. Understanding Pompeian household practices through their material culture. *FAC-TA*, 3, 11–33.
- Ascher, R. 1961. Analogy in Archaeological Interpretation. *Southwestern Journal of Archaeology*, 17, 317–325.
- Bartha, P. 2010. *By Parallel Reasoning: The Construction and Evaluation of Analogical Arguments*. Oxford University Press, New York.
- Binford, L. 1962. Archaeology as anthropology. *American Antiquity*, 28, 217–225.
- Binford, L. 1967. Smudge pits and hide smoking: The use of analogy in archaeological reasoning. *American Antiquity*, 32, 1–12.
- Binford, L. 1972. *An Archaeological Perspective*. Seminar Press, New York.
- Boozer, A. 2015. The tyranny of typologies: Evidential reasoning in Romano-Egyptian archaeology. In *Material Evidence: Learning from Archaeological Practice*. Eds. R. Chapman & A. Wylie. Routledge, London, 92–109.
- Childe, V.G. 1956. *Piecing Together the Past*. Routledge and Kegan Paul, London.
- Clark, J.G. 1951. Folk-culture and the study of European prehistory. In *Aspects of Archaeology in Britain and Beyond*. Ed. W. F. Grimes. H. W. Edwards, London, 49–65.
- Clark, J.G. 1953. Archaeological theories and interpretation: Old world. In *Anthropology Today*. Ed. A. L. Kroeber. University of Chicago Press, Chicago, 343–383.
- Currie, A. 2016. Ethnographic analogy, the comparative method and archaeological special pleading. *Studies in History and Philosophy of Science*, 55, 84–94.
- Currie, A. 2018. *Rock, Bone and Ruin: An Optimist's Guide to the Historical Sciences*. MIT Press, Massachusetts.
- Daremburg, C.V. & Saglio, E. 1881–1904. *Dictionnaire des Antiquités grecques et romaines* (3<sup>rd</sup> edition). 3 Vols. Librairie Hachette, Paris.
- Freeman, L. G. 1968. A theoretical framework for interpreting archaeological materials. In *Man the Hunter*. Eds. R. B. Lee & I. DeVore, Aldine, Chicago, 262–267.
- Gero, J. 2007. Honoring ambiguity/problematic certainty. *Journal of Archaeological Method and Theory*, 14, 311–327.
- Gould, R. 1980. *Living Archaeology*. Cambridge University Press, Cambridge.
- Hawkes, C. 1954. Archaeological theory and method: Some suggestions from the old world. *American Anthropologist*, 56, 155–168.
- Hesse, M. 1966. *Models and Analogies in Science*. University of Notre Dame Press, Notre Dame.
- Hodder, I. 1982. *The Present Past: An Introduction to Anthropology for Archaeologists*. Batsford, London.
- Laudan, L. 1977. *Progress and Its Problems*. University of California Press, Berkeley & Los Angeles.
- Lightfoot, K. 1995. Culture contact studies: Redefining the relationship between prehistoric and historical archaeology. *American Antiquity* 60, 199–217.
- McKaughan, D. 2008. From ugly duckling to swan: C. S. Peirce, abduction and the pursuit of scientific theories. *Transactions of the Charles S. Peirce Society*, 44, 446–468.
- Nyrup, R. 2015. How explanatory reasoning justifies pursuit: A Peircean view of IBE. *Philosophy of Science*, 82, 749–760.
- Nyrup, R. 2018. Of water drops and atomic nuclei: Analogies and pursuit worthiness in science. *British Journal for the Philosophy of Science*, forthcoming. Early access: <https://doi.org/10.1093/bjps/axy036>
- Orme, B. 1974. Twentieth-century prehistorians and the idea of ethnographic parallels. *Man (New Series)*, 9, 199–212.
- Orme, B. 1981. *Anthropology for Archaeologists: An Introduction*. Duckworth, London.
- Peacock, J. 2016. When is a mortarium not a mortarium? Analogies and interpretation in Roman Cumbria. In *Proceedings of the 17th Iron Age Research Student Symposium*. Eds. G. Erskine, P. Jacobsson & S. Stetkiewicz. Archaeopress, Oxford, 20–27.
- Ravn, M. 2011. Ethnographic analogy from the Pacific: Just as analogical as any other analogy. *World Archaeology*, 43, 716–725.
- Reiss, J. 2015. A pragmatist theory of evidence. *Philosophy of Science*, 82, 341–362.
- Salmon, M. 1976. "Deductive" and "inductive" archaeology. *American Antiquity*, 41, 376–381.
- Salmon, M. 1982. *Philosophy and Archaeology*. Academic Press, New York.
- Salmon, W. 1967. *The Foundations of Scientific Inference*. University of Pittsburgh Press, Pittsburgh.
- Šešelja, D., Kosolosky, L. & Straßer, C. 2012. The rationality of scientific reasoning in the context of pursuit: Drawing appropriate distinctions. *Philosophica*, 86, 51–82.
- Smith, B. 1977. Archaeological inference and inductive confirmation. *American Anthropologist*, 79, 598–617.
- Smith, M.A. 1955. The limitations of inference in archaeology. *Archaeological Newsletter*, 6, 3–7.
- Stahl, A. 1993. Concepts of time and approaches to analogical reasoning in historical perspective. *American Antiquity*, 58, 235–260.
- Stanford, K. 2006. *Exceeding Our Grasp: Science, History*

- ry and the Problem of Unconceived Alternatives. Oxford University Press, Oxford.
- Stiles, D.** 1977. Ethnoarchaeology: A discussion of methods and applications. *Man (New Series)*, 12, 87–103.
- Ucko, P.** 1969. Ethnography and archaeological interpretation of funerary remains. *World Archaeology*, 1, 262–280.
- Ucko, P. & Rosenfeld, A.** 1967. *Paleolithic Cave Art*. World University Library, London.
- Watson, P.J.** 1979. The idea of ethnoarchaeology: Notes and comments. In *Ethnoarchaeology: Implications of Ethnography in Archaeology*. Ed. C. Kramer. Columbia University Press, New York, 277–287.
- Whitt, L.** 1990. Theory pursuit: Between discovery and acceptance. In *PSA: Proceedings of the Biennial Meetings of the Philosophy of Science Association. 1990 Volume One: Contributed Papers*. Eds. A. Fine, M. Forbes & L. Wessels. Philosophy of Science Association, East Lansing, MI, 467–483.
- Wylie, A.** 1982. An analogy by any other name is just as analogical: A commentary on the Gould-Watson dialogue. *Journal of Anthropological Archaeology*, 1, 382–401.
- Wylie, A.** 1988. ‘Simple’ analogy and the role of relevance assumptions: Implications of archaeological practice. *International Studies in the Philosophy of Science*, 2, 134–150.
- Wylie, A.** 2002. *Thinking from Things: Essays in the Philosophy of Archaeology*. University of California Press, Berkeley.
- 4 Smith and Salmon both draw on Wesley Salmon’s (1967, 113–118) account of plausibility reasoning in science.
- 5 Notice, a hypothesis can be “most likely” without being particularly likely in absolute terms and “approximately correct” while being wrong about many details.
- 6 This analysis of analogies was pioneered by Hesse (1966) and further developed by Bartha (2010). Wylie (2002, ch. 9) and Currie (2016) apply it to analogies in archaeology.
- 7 Eliminative inference is also sometimes known as “eliminative induction” or “inference to the only explanation”.
- 8 As Reiss (2015, 357–358) argues, the strongest eliminative arguments rule out all plausible competing hypotheses, but weaker degrees of warrant can be obtained by ruling out at least most, many, or some alternatives.
- 9 The concept of ‘pursuit’ as a modality of theory assessment distinct from acceptance was introduced in philosophy of science by Laudan (1977). C.S. Peirce’s concepts of ‘abduction’ and ‘economy of research’ capture many of the same ideas (McKaughan 2008). The notion of pursuit has been further developed, e.g., by Whitt (1990), Achinstein (1993), Šešelja, Kosolovsky & Straßer (2012), and Nyrup (2015). Pursuit worthiness uses of analogy are also analysed in Nyrup (2018) (focusing on a case study from nuclear physics).

## NOTES

- 1 This tripartite distinction is a simplification. In Section 3, I will introduce further subdivisions and argue that different uses of analogy are often more entangled than might be suggested by this neat distinction. Nyrup (2018) draws a similar distinction between ‘justificatory’, ‘generative’ and ‘pursuit worthiness’ accounts of analogies in science.
- 2 This section focuses on the literature concerned with ethnographic analogies in prehistoric archaeology, following the detailed historical account by Orme (1974; 1981), Stiles (1977), Stahl (1993) and Wylie (2002, ch. 9). As I emphasise below, the issues raised here also apply to the use of analogies in other branches of archaeology.
- 3 Laming and Leroi-Gourhan criticise the reliance on analogies in general, without distinguishing different uses as I do here. For my purposes, what is important is the challenge to analogies which Orme articulates, regardless whether Laming and Leroi-Gourhan intended to make this point.

# **ARCHAEOLOGY AS ANALOGY. AN INTRODUCTION TO THE TAXONOMY OF ICONIC MODELS BASED ON ANALOGY**

**EERO MUURIMÄKI**

On the basis of Rom Harré's theory, scientific knowledge is constituted mainly by models. The relationships between models, in turn, are based on analogical relations. The two main groups of models are paramorphs and homeomorphs. In archaeology, homeomorphs are constructed according to the attributes discernible from artefacts. These models, then, are normally called typologies and taxonomies. We cannot get any information about the classes or taxa concerning artefacts without 'extra' knowledge. Paramorphs, on the other hand, are models with which we bring about knowledge concerning human actions and structures of societies. With paramorphs we explain the silent and passive artefactual findings of archaeology as products of social and cultural human actions. In this article, Harré's theory of models is revisited and re-evaluated considering the role and uses of analogy and analogical reasoning in archaeological theory.

*Keywords:* philosophy of archaeology, analogy, models, paramorph, homeomorph, the structure of theory, typology

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## **ANALOGY IN THE HISTORY OF THE THEORY OF ARCHAEOLOGY**

By dictionary definition (e.g. <https://www.dictionary.com/browse/analogy>), analogy means similarity between like features of things and the comparison thereof. Analogical reasoning, that is reasoning based on analogy, is a form of reasoning in which one thing is inferred to be similar to another thing in some capacity. In archaeology, analogical reasoning therefore aims to infer from the qualities of a known phenomenon those of an unknown one. The use

of analogical inference in this sense has been central to the discussions in the theory of archaeology since the 19th century. For instance, in his article *Mindre Bidrag til den forhistoriske archæologis metod* Danish archaeologist Sophus Müller (1884) regarded analogy as the main tool of archaeological inference (c.f. Muurimäki 2000, 144–147). The most prominent methodologist in archaeology in the beginning of the 20th century, V.G. Childe does not use the word analogy in the context of inference, but rather speaks about “ethnographic parallels” instead (Childe 1956, 47–48).<sup>1</sup>



Childe is aware of the dangers of these parallels and tries to find constraints for their proper use (Childe 1947, 54).

One good attempt towards establishing a constrained use of analogies in the service of archaeology was provided by Robert Ascher (1961). However, Ascher's work remained unnoticed, mainly because, in the following year, Lewis R. Binford initiated his project of New Archaeology which, in general, opposed the use of analogical reasoning (Binford 1962; 1967; Gould 1989). For Binford, the use of analogy would entail that our knowledge of the past remains limited to our knowledge of the present (Binford 1972, 87). For another pioneer of New Archaeology, David L. Clarke, "analogue models" are the "most tantalizingly dangerous form of model with historical, anthropological or abstract situations providing generalizations transferred to archaeological situations" (Clarke 1978, 33). Contrary to this statement, Clarke (1978, 4) nevertheless describes, for example, the process of discovering the 'true' nature of 'thunderbolts' as stone axes as a process dependent on analogical reasoning (more on this below).

Poststructuralism did not change archaeologists' pessimistic attitude towards analogical reasoning. In fact, analogical reasoning is non-existent to most poststructuralist archaeologists. In two constitutive books of the school (Shanks & Tilley 1987; 1994), there is no discussion about the role and significance of analogy in archaeological reasoning. It seems that in both the empiricist and the transcendental idealist traditions – which I regard post-structuralism belonging to (Muurimäki 2000, 49) – it was implicitly regarded that archaeology cannot postulate an unobservable subject. In other words, the non-perceivable

was considered to fall outside the scope of science and speaking about the non-observable was somewhat of a taboo, if we use the anthropological term.

## WHY WE NEED ANALOGICAL REASONING IN ARCHAEOLOGY

Together with a host of other sciences, archaeology is faced with a common problem: we cannot observe that which we are interested in. Therefore, in order to have knowledge of the past, we need analogical reasoning. We know from the history of science that there was a time when no equipment existed that would have allowed the observation of atoms or elementary particles, viruses, etc, and their existence had to be inferred from that which was observable. Before such devices were developed, scientists construed models to represent the unknown mechanisms or particles which were responsible for producing the observed phenomena, such as the lines in Wilson's cloud chamber or the symptoms of diseases that could not be explained by the presence of any known bacteria. In other words, the history of science has demonstrated that the existence or reality of a host of objects or phenomena was inferred before they could be observed. As noted by Rom Harré, we had atoms, electrons, influenza viruses, quasars, and so on, long before anybody observed those entities (Harré 1970, 49, 83). After the publications of Harré's book we have observed objects which were earlier only thought to be real, such as black holes.

It is often suggested that, in the empiricist tradition, archaeologists study artefacts in their context. But are we only interested

in artefacts and their contextual relations to other artefacts? Artefacts and their properties are important, but their study is only instrumental. The actual objective of archaeology is knowledge of cultural and social human beings and the intentions and motivations behind their actions. Nevertheless, by studying artefacts, we only produce typologies and taxonomies, not knowledge of the intentions of past people. Artefacts are results or products of meaningful actions, but the information concerning their production is not inherent in the artefacts. A Bronze Age sword, for instance, can be called a sword only because objects similar to those exist in the historical times. We can therefore compare the historical artefact to its Bronze Age counterpart and make the analogical inference that the Bronze Age artefact is in fact a sword. Here the sword from the historical times is the so-called source of the model that is the Bronze Age sword or, in other words, the 'swordness' of the Bronze Age artefact.

Archaeology is a human science that studies humans as active cultural and social beings. However, as a student of prehistory, the archaeologist is in a way methodologically and epistemologically lonesome in the field of the human sciences. Ethnographers, historians, and cultural and social anthropologists can observe the activities of their subjects of study and directly ask those people about the meanings of their activities. The name and use function of an artefact, for instance, can be directly inquired from a living member of the culture in question. Alternatively, these scholars can turn to the research of their predecessors for narratives. At least part of the meaning of an artefact or an activity can be understood in this way. This, however, does

not mean that research can stop there.

The study of history consists of texts written in meaningful language. Historians have peace treaties, agreements, letters, registers, etc. which are conceptually construed. After source criticism was introduced, solutions to some problems can be found in the texts. Nevertheless, texts are only a good starting point for the historian. The meanings given in the data of the historian are not enough, and it is necessary to try and reach that which remains hidden 'behind the facts'.

In natural sciences and prehistoric archaeology, researchers are epistemologically faced with material things of a kind similar to the historian's data; things that had meanings, but which are now completely lost. Without analogical reasoning these things would remain meaningfully as vacuous as a sump left by a stone on a beach.

Historians and cultural anthropologist meet pre-conceptualised data with meanings given by the people they are studying. On the one hand, in ontological or metaphysical terms, the student of prehistory deals with the same kind of reality as the historian or the cultural anthropologist. On the other hand, archaeologists encounter things that are material in a sense that differs from the materiality of the data of his/her fellow scientists. The materials of the archaeologist are dead, inert, and empty of meanings by themselves. Artefacts are produced for practical and social purposes by humans as the active members of their societies. However, we cannot perceive people using these artefacts in a symbolic or practical fashion anymore. The information pertaining to the meanings of artefacts is not embedded in the artefacts. We must dig it out. This is apparent, for example, in the history of archaeol-



ogy. In Europe, stone axes were not realized as stone axes until explorers brought with them stone axes used by distant peoples (Muurimäki 1986, 181; Kunnas-Pusa, this volume).

We have, both in archaeology and social and cultural anthropology, also another problem. Although social and cultural anthropologist can observe the actions of living peoples and ask questions about the meanings of their actions, they cannot observe the social and economic structures of a living society. Social structures can be known only through their effects, just like in physics elementary particles can be known through their observed effects. Statements concerning the nature of social and economic structures are always conclusions based on model-building. Band societies, chiefdoms, states, etc., are not given in the data. This simple reason is why there is so much dispute about them among scholars.

When we are speaking about prehistoric archaeology, there is no linguistically given material to start from. We cannot even find meaningful texts that could tell us what the role of a particular artefact was in the ancient society (Muurimäki 1986, Muurimäki 2000, 13). We cannot even say that a stone axe is a stone axe without analogical reasoning. What we see according to common sense is a stone with an edge. The conception of a stone axe is developed in the transitive dimension of archaeological science, that is it exists as an object in the sense that it is conceptual, inferred, and imagined (for transitive and intransitive objects of science, see Clarke 1978; Bhaskar 1979; Trigger 1989; Muurimäki 1995).

## TWO USES OF ANALOGY IN ARCHAEOLOGY

Analogy can be used in archaeology in two ways. On the one hand, analogy can be used to arrange observed data. On the other hand, analogy can be used to increase our knowledge about that which cannot be perceived, the real subject of our research. Analogies have been used in both ways from the very beginning of archaeological studies.

The first type of use of analogy is used in typology where artefacts are grouped according to their attributes. Typologies are not normally recognised as instances of analogy. Bo Gräslund (1986) is an exception. In his theory, typologies are based on type analogies and find analogies. Type analogies are based on physical properties of the artefacts (Gräslund 1986, 5–6). The requirement for artefacts to belong to the same type is that they are regarded to be analogical according to some specific properties that they have in common. These properties do not need to be identical, only analogical. In type analogies, no new knowledge is created; the question is about arrangement of information attainable by observation. In other words, in type analogy, artefacts are compared based on sets of attributes.

The second type of analogical reasoning, analogy as inference to the unobservable, is used when we aim to attain knowledge about the activities and meaning-dependent structures and processes of prehistoric people. In this case, analogy concerns the non-observable realm of the world.

As already mentioned, the role of analogy in theory building about the unobservable has also been recognized since the beginning of archaeological studies. The method was treated superficially until the first half of the

20th century, and a more precise treatment was only provided by Robert Ascher in the early 1960s. His seminal work on the topic was, however, largely forgotten because soon after the publication of Ascher's (1961) *Analogy in Archaeological Interpretation*, the New Archaeology and processualism were born. In these schools of thought, attitudes towards analogy were mixed. On the one hand analogy was said to have no place in science (as argued by Binford, Gould, etc.), while on the other hand some representatives of processualism saw analogy as essential in theory building (e.g. Wylie 1982).

There are no meanings inherent in the materials of prehistoric archaeology. Meanings connected to them as prehistoric artefacts are created in the transitive dimension of science. We name a thing as stone axe because in the social process of archaeological studies it has been determined that it is a blade of an axe. This does not, however, mean that we have no possibility to attain knowledge if we give up the empiricist or positivist theory of science, which is inherent also in poststructuralist theory (Muurimäki 1995). Analogical reasoning (and models created by analogical reasoning) is a process by which new meanings are given to data in a way that is not restricted to empiria, but is not arbitrary or based only on socially determined knowledge. In order to elaborate this position, I will turn to Rom Harré's theory of models and its applicability in prehistoric archaeology.

## **THEORIES, SYMBOLS, AND ICONS**

The theory of archaeological model building that I propose here is based mainly on

the theories of Rom Harré (1970; 1972). Although Harré's theory is modelled after and for the natural sciences, it has great applicability in prehistoric archaeology. Regardless of the theory's background in natural sciences I do not assign a strong degree of naturalism to the ontological dimension, meaning that I do not hold that inference to the unobservable would follow as a matter of course from the use of natural scientific methods. In other words, I make a clear distinction between the natural and the cultural; people have purposes, natural things do not. Social structures are partly meaning-dependent while natural things have only those meanings given to them by people. Meaning in natural things is not inherent.

According to Rom Harré (1970; 1972), scientific theories, as descriptions of the mechanisms of the natural world, are what he calls statement-picture complexes. Statement-picture complexes have generally a sentential and an iconic part. The sentential part is normally expressed as a formula, such as Newton's laws of gravity. The iconic part is expressed as a picture, such as the more recently found gravitational waves (Harré 1970, 13, 28, 54). In archaeology, there are no sentential formulas at the core of a theory, although statistical theory, for example, can be used as guidance when looking for meaningful variations in data.

Theory building in archaeology can be conceptualised to be based on different kinds of iconic models which are connected by analogical relations. This conceptualisation does not exhaust the structure of the theory, but can be seen to be the core of the structure to which the other components are connected.

Before going into analogical models, it is

useful to clarify two main kinds of ‘vehicles of thought’ that are used for reasoning in the vocabulary of Rom Harré. First, a conceptual division must be made between iconic models and symbols. For example, a hieroglyphic ox head (𐂡) is a model of an ox, even if a truncated one, and the same figure is a symbol when acting as a sign of the letter Alpha ( $A\alpha$ ) of the alphabetic letters (Harré 1970, 37).

Symbols are arbitrary conventions. There are no resemblance constraints or natural restrictions for using a thing to stand as a symbol of another thing. In our culture some hundred years ago, sceptre and crown were the attributes of kings. The Mayas and the ancient Chinese used jade to symbol power. Different cultures have different symbols for power, and there is no inherent connection between the symbol and the power that it represents. In practise, power was often symbolised with something that is rare or requires a lot of skilful work to produce, but in theoretical terms a symbol (sceptre) does not have any inherent connection to its subject (king) (Harré 1970, 37–38).

Iconic models are projective conventions. They are in some respect similar to their source, that is that which the model aims to stand for. An iconic model must in some respect be structurally similar to the thing which it is an icon of. The relationship between a thing and its icon is analogical. A 10-cm-long model of a Mini Cooper car must be like a Mini Cooper for it to be a model of the car.

On the other hand, it is also important to stress that an iconic model is not fully identical with its source. Analogical relationship is not a relationship based on identity. For instance, those who think that it is not pos-

sible to make reconstructions in archaeology misunderstand the purpose of a reconstruction. A reconstruction is an analogical model, often made in the scale of 1:1. The reconstruction is not, however, the same as the original. If it were similar to the original, it would be a copy. The relationship would be of the nature of identity (Muurimäki 2002). In other words, it is important that an analogical model remains in some respect different from the entity that it is a model of.

## THE TAXONOMY OF MODELS

According to Rom Harré, there are two important kinds of models, paramorphs and homeomorphs. In archaeology, paramorphs are vehicles for explanations of the archaeological record, while homeomorphs are used for the description of the archaeological record. In addition to these two, there is a third kind of model, protomorph. Protomorphs are only methodologically important, and their ontological status is indefinite (Harré 1970, 38–42; Muurimäki 1986, 186–187). In short, homeomorphs and protomorphs do not increase our knowledge, they only rearrange it. Descriptions, typologies, and taxonomies are archaeological examples of homeomorphs, while dendrograms, for example, are protomorphs. (Muurimäki 1986, 186). Unlike protomorphs and homeomorphs, paramorphs are the kinds of models which convey new information to existing theories and are therefore at the core of theory building.

Harré (1970) classifies models on the basis of their relationship to their source and subject. The source of the model is the material on which it is based. In Niels Bohr’s atomic model, the subject of the model is the atom,

while the structure of the solar system is the source for the model. The main difference between homeomorphs and paramorphs lies in the source of the model. In paramorphs the source and the subject are different (as in Bohr's atomic model). In homeomorphs, the source of the homeomorph is the same as its subject. In homeomorphs we manipulate the material so that, in archaeology, for example, the artefactual material is used to attain information concerning their age and geographic distribution. In homeomorphs we do not increase our knowledge of human actions or social structures. Homeomorphs, then, are simply descriptions of the material.

The past reality which archaeology studies – the activities of prehistoric people and the structures and processes of those activities – has vanished. No matter how much data we have concerning the artefacts, we cannot get knowledge about prehistoric people's behaviour, we can only have typologies, taxonomies, and chronologies. For a good reason, these were the main concerns of the empiristically oriented traditional archaeology.

If we want knowledge about the activities of prehistorical people, or to even assign activity-dependent names to artefacts, such as 'stone axe', we must get knowledge from somewhere other than archaeological finds, artefacts, or ecofacts. In archaeology, the missing knowledge is retrieved usually from cultural anthropology, ethnology, or experimental activity. In these cases, the subject of the model is the entity which it represents, of which it is a model. In archaeology, the subject is the unobservable action or process which has produced the record we now observe, the so-called data (Harré 1970, 40). An example of a more 'primeval' nature would be the

explanatory theory by which certain stones can be seen as stone axes. Here the subject of the model are the modes of production and uses of stone axes thought in a generic way. The source of the theory is fetched from the ethnographic data of the 18th and 19th centuries, a time when observations or written descriptions of people making and using stone axes were made in abundance. The stone axes themselves, found in the European soil, are the very material to be explained.

According to Harré's (1961, 50) theory there is no difference between 'scientific' reasoning and 'unscientific' reasoning. This can be well seen in an example taken from the history of archaeological studies. The model which explained the stone axes as thunder bolts was also based on an iconic model. Ancient peoples were asking what could have produced the destruction of trees or buildings caused by lightning. They knew the power of a metal axe and thought that stone axes – which were sometimes found at the site of a lightning strike – were a material manifestation of the lightning strike. On the empirical side of the model is the observation that rain and thunderstorms wash the earth and make it easier to find stone axes. After Benjamin Franklin made his experiments with lightning, the source side of this model was undermined.

The role of homeomorphs in science sounds strange at first. Their source is the same as their subject. Nevertheless, archaeology has used these kinds of models from the very beginning. Typologies or taxonomies are good examples of the use homeomorphs in archaeology. The source of the typology is a group of artefacts in their context, and the subject of the typology are the same artefacts.

There are different types of homeomorphs which have their counterparts in different types of typologies. The main types are teleiomorphic idealisations and teleiomorphic abstractions (Harré 1970, 42).

In teleiomorphic abstractions there are fewer attributes in the models as there are in the source. Teleiomorphic abstractions correspond perfectly to the definition of artefact type by V.G. Childe. Childe (1956, 4–6) said that, for an archaeologist, types are abstractions from those attributes that the archaeologist has chosen to recognise. Which properties are chosen depends largely on the purposes for which the model is created, as in the definition of homeomorphic abstractions.

The other main type of homeomorphs are teleiomorphic idealisations. In teleiomorphic idealisations the properties are selected according to some scale of values. Harré proposes Weber's ideal types as an example of teleiomorphic idealisations in human sciences (Harré 1970, 42). In archaeology, we can regard types as teleiomorphic idealisations in the sense that type was conceptualised by, for example, Oscar Montelius. Montelius did not seek to define the limits of a type, but saw that certain artefacts serve as idealised representations of a type. Therefore, a newly found artefact, for instance, is determined to belong to a type based on its resemblance to the artefact that is thought to best resemble that type (Klejn 1982, 3, 41).

Until now I have discussed classical typology and taxonomy. The situation is not different if we change from classical typology to *chaîne opératoire*. *Chaîne opératoire* is the process of determining the life history of an artefact from the acquisition of raw material to the manufacture and use of the complete

artefact, and its eventual discard. In determining each of these steps along the artefact's life history we resort to model building.

The third main class of models are protomorphs (Harré 1970, 50). As the name indicates, protomorphs are, in a way, preliminary models. They share certain characters with paramorphs, but they are constructed to look like homeomorphs. A good example of protomorphs are dendrograms in archaeological taxonomy. Because dendrograms represent real relations between different kinds of artefacts, they look like paramorphs. However, protomorphs only represent statistical links between individual members of the model, not likeness, as is the case with paramorphs.

## THE ROLE OF ANALOGIES

There are three possible ways in which a model of unknown past mechanisms and the, in most cases, known source mechanism can come to form an analogical relationship: positive analogy, negative analogy, and neutral analogy.

If A and B are alike, the question is about positive analogy.

If A and B are different, the question is about negative analogy.

If we do not know whether the attributes are alike or different, we must regard the relationship as neutral analogy until we know better.

There has been discussion in archaeology about whether, in the case of reconstruction, one can really speak of reconstruction or if all reconstructions are actually constructions. We come to realise that those who insist that there are no reconstructions but only constructions also hold that the only possi-

ble form of analogy is positive analogy, i.e. the relationship between the model and the subject is based on likeness. However, if the model and the subject are connected through positive analogy alone, the relationship is not analogical. In the case of reconstructions, this would make the model (the reconstruction) identical to its subject. In other words, reconstructions are always based on neutral or negative analogy (Harré 1972, 173–175; Muurimäki 2002).

### **SOME EXAMPLES OF MODELS IN ARCHAEOLOGY**

Let's take some tangible examples of models in archaeology. Reconstructed houses and dresses, for example, are typical paramorphs. The sources of the models are often ethnographically known buildings, dresses, or knowledge derived through experimental work that can be seen relevant to the model. The reconstruction work can be complicated and drawn from many different sources, as in the case of the reconstruction of the 1000-year-old Eura costume by Pirkko-Liisa Lehtosalo-Hilander (1984). In the reconstruction, the cloth under the shoulder buckles is compatible with the so-called Peplos dress used in ancient Greece, but also textile produced in Early and Middle Iron Age Scandinavia. The structure of the skirt, however, resembles those of 19th century Ingria. Here we can see that analogical reasoning does not constrain the inference. Paramorphs can be multiply connected.

If a paramorph has only one source context, it is singly connected. In processualism, one of the main arguments against analogical reasoning was that it restricts our knowledge to that which is already known. If all mod-

els were only singly connected this would be true, but there are also multiple connected paramorphs which use two or more sources, as the example above indicated. Importantly, then, multiply connected paramorphs create new kinds of knowledge (Harré 1970, 47–49). Multiply connected models also provide a solution to the problem identified by Binford and others who insisted that analogy restricts our knowledge to that which is already known. Multiply connected paramorphs have given us electrons, neutrons, viruses, black holes, etc., entities that were non-observable at the time of their invention.

In archaeology, by using experiments and sources from different cultures, and even the practises of the craftsmen of our own culture, we can, for example, build reconstructions of buildings or reconstruct ancient dresses which are not analogical to any ethnographically known buildings or dresses. Paramorphs can combine attributes from different sources and create wholes that are not known in the historically or ethnographically known world. This kind of model building has been in use in archaeology from the very beginning.

It can be said that the problem of induction (i.e. the idea that you cannot draw general conclusions from observed instances) is solved on a theoretical and a philosophical level (Muurimäki 1986). Philosophy can give us some general principles for choosing the best theory, but it is the responsibility of the archaeologists to solve which kind of reconstruction best explains the prehistoric situation. To draw an example from the reconstruction of ancient housing, it is not enough that there is a 'fit' between postholes and posts. Many kinds of considerations about the technology, economy and ecological situation

of the society are needed when determining how a house might have looked like in the past.

As pertains to models, there is also another kind of important distinction which Har   does not discuss – the difference between the source context that we cannot observe and the source context that is theoretical and unobservable. When discussing a chiefdom, the archaeologist depends on models provided by social anthropologists. However, social anthropologists cannot observe a chiefdom. Instead, they can only observe the actions which they interpret to be crucial for chiefdoms. The chiefdom of the anthropologist is a model in itself, but it also serves as the source of a chiefdom model made by the archaeologist. Chiefdom is a result of reproduction and transformation of specific kinds of actions by its members (Bhaskar 1979, 41–46). These actions compose the structure of a society. Some of the actions leave material remains or traces, such as the rich graves and the poor graves that the archaeologist can observe. As a model, chiefdom corresponds to Weber’s ideal types which in Har  ’s taxonomy are homeomorphs and, more accurately, teleiomorphic idealisations. For an archaeologist, chiefdom is a paramorphic model, it is in a way a model of the second degree.

Before a theory about the structure of a prehistoric society can be expressed, both the source context and the subject context must be thoroughly investigated. On the one hand, this means studying the actions of the members of a living society, the structure of that society, as well as the material items produced by the actions of the members of a past society. Then those material items must be studied considering what is known about the

living society, and only then a model of the structure of the past society is possible to put forth. On the other hand, the archaeological record must be classified in a way that makes visible the differences and similarities thereof. In making similarities and differences discernible to us statistics, for instance, can be an important device, but it is in no way at the core of archaeological explanation (c.f. Salmon 1982).

## **MODELS, ANALOGIES, AND EXPLANATIONS: A CONCLUSION**

Processualism wished to restrict the use of explanation to the explanation of change in prehistoric societies and economies (e.g. Renfrew & Bahn 2012, 463–492). However, the explanation of social change is only a small fracture of the range of uses of the concept of explanation. If we say that a stone with an edge is a stone axe, we effectively provide an explanation for the edge found on that stone. This explanation presupposes the use of analogical reasoning from source context (ethnographically known stone axes) to the subject context (stone axe in the past). If we take a wider viewpoint, we can see that what we are actually explaining is a piece of the archaeological record. The changes in the archaeological record itself are important, but their explanation can only amount to a small portion of the complete scope of the uses of explanation in archaeology.

The archaeological record is material. It must be conceptualised by descriptions, typologies, and taxonomies. By conceptualisation, we metaphorically translate the material record into conceptual items. In addition to



this, we must think of all the possible kinds of actions, structures, or processes that could have produced that which is now observable in the archaeological record.

We must also be able to think in which respect the unknown action, structure, or process could be similar to or different from those known actions, structures, or processes with effects similar to those which can be observed in the archaeological record. In a way this is the 'testing' of a theory, but the testing is not schematic or mechanical in the sense that it was supposed in New Archaeology or processual theory. However, theory building is not without rules either nor is it dictated by the social conventions of the time, as was presupposed in post-processualism.

The theory of iconic models and analogical reasoning does not aim to revolutionise theory building in ways that processualism and post-processualism did. A lot of good science has been done in both, and the only thing that the theory of iconic models and analogical reasoning aims to do is provide a description of what it is exactly that we are doing in archaeological theory building so that there remains no conflict between philosophy of archaeology and archaeological theorising.

## REFERENCES

- Ascher, R.** 1961. Analogy in archaeological interpretation. *Southwestern Journal of Anthropology*, 17 (4), 317–325.
- Bhaskar, R.** 1979. *The Possibility of Naturalism. A Philosophical Critique of the Contemporary Human Sciences*. Harvester Press, Sussex.
- Binford, L.R.** 1962. Archaeology as anthropology. *American Antiquity*, 28 (2), 217–225.
- Binford, L.R.** 1967. Smudge pits and hide smoking: the use of analogy in archaeological reasoning. *American Antiquity*, 32 (1), 1–12.
- Binford, L.R.** 1972. *An Archaeological Perspective*. Seminar Press, New York.
- Childe, V.G.** 1947. Archaeology as a social science: inaugural lecture. *University of London Institute of Archaeology. Third Annual Report 1946*, 49–60.
- Childe V.G.** 1956. *Piecing Together the Past. The Interpretation of Archaeological Data*. Routledge, London.
- Clarke, D.L.** 1978. *Analytical Archaeology*. Second edition. Methuen & Co., Bristol.
- Gould, R.A.** 1989. Ethnoarchaeology and the past: our search for the 'real thing'. *Fennoscandia archaeologica*, VI, 3–22.
- Gräslund, B.** 1987. *The Birth of Prehistoric Chronology*. Cambridge University Press, Cambridge.
- Harré, R.** 1961. *Theories and Things. A Brief Study in Prescriptive Metaphysics*. Heed and Ward, London.
- Harré, R.** 1970. *The Principles of Scientific Thinking*. Macmillan, London.
- Harré, R.** 1972. *The Philosophies of Science. An Introductory Survey*. Oxford University Press, Oxford.
- Klejn, L.S.** 1982. *Archaeological Typology*. BAR International Series, 153. BAR, Oxford.
- Lehtosalo-Hilander, P.-L.** 1984. *Ancient Finnish Costumes*. The Finnish Archaeological Society, Helsinki.
- McNairn, B.** 1980. *The Method and Theory of V. Gordon Childe. Economic, Social and Cultural Interpretations of Prehistory*. Edinburgh University Press, Edinburgh.
- Müller, S.** 1884. *Mindre bidrag til den forhistoriske archaeologis methode*. Aarbøger for Nordisk Oldkyndighed og Historie 1884, 161–216.
- Muurimäki, E.** 1986. Transcendental realism and archaeology: an introductory survey. *Kontakt-stencil*, 28–29, 148–201.
- Muurimäki, E.** 1995. Some notes on the epistemic fallacy in the philosophy of archaeology. In *Nordic TAG: The Archaeologist and His/Her Reality. Report from the Fourth Nordic TAG Conference*. Eds M. Tusa & T. Kirkinen. Helsinki Papers in Archaeology 7. University of Helsinki Department of Archaeology, Helsinki, 7–15.



- Muurimäki, E.** 2000. Realismi ja antirealismi arkeologian tieteen teoriassa C.J. Thomsenista V.G. Childeen. Unpublished licentiate thesis. University of Oulu.
- Muurimäki** 2002. Mikä on 'rekonstruktio'? *Muinaistutkija*, 3/2002, 59-60.
- Renfrew, C. & Bahn, P.** 2012. *Archaeology. Theories, Methods and Practice*. Thames & Hudson, London.
- Salmon, M.H.** 1982. *Philosophy and Archaeology*. Academic Press, New York.
- Shanks, M. & Tilley, C.** 1987. *Social Theory and Archaeology*. Polity Press, Worcester.
- Shanks, M. & Tilley, C.** 1994. *Re-Constructing Archaeology. Theory and Practice*. Routledge, Somerset.
- Trigger B.** 1989. *A History of Archaeological Thought*. Cambridge University Press, Cambridge.
- Wylie, A.** 1982. An analogy by any other name is just as analogical. A commentary on the Gould-Watson dialogue. *Journal of Anthropological Archaeology*, 1, 382-401.

## NOTE

- 1 For example, Childe speaks about the "false analogy between men and poultry" and "the employment of the analogy between organic structure and social structure" (McNairn 1980, 117, 118), but not in terms of analogical inference.

# **HUNTER-GATHERER PRONE BURIALS OF THE KUBENINO SITE, NW RUSSIA (C. 5000 CAL BC) – NORMATIVE OR DEVIANT BURIALS?**

**MARJA AHOLA, EKATERINA KASHINA & KRISTIINA MANNERMAA**

This paper concerns Stone Age hunter-gatherer mortuary practices from the perspective of prone burials, i.e., the rare tradition of burying the deceased on their stomach. By using prone burials from the Neolithic hunter-gatherer site of Kubenino (northwestern Russia) as an example, the paper aims to understand whether the burials differ from the normative burial rituals of the respective period and region, by exploring how common the practice of prone burial was among the Mesolithic and Neolithic hunter-gatherer populations of the northern European boreal zone. Furthermore, by comparing the Stone Age prone burials to inhumations in other body positions, the paper will explore whether this practice can be defined as a deviant mortuary practice. As an additional tool of interpretation, we will also use ethnographic analogues from historical hunter-gatherer and pastoralist populations of northern Eurasia.

*Keywords:* Kubenino; hunter-gatherer archaeology; mortuary practices; prone burials; deviant burials; normative burials; inhumation burials

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## **INTRODUCTION**

In late 2016, a new Russian-Finnish collaboration was launched in order to how the prehistoric hunter-gatherers of North-Eastern Europe buried their dead. As a first case study, we revisited the burial finds from the early prehistoric site of Kubenino (northwestern Russia) (Kashina et al. 2017), excavated in the early 1930s by Russian archaeologist Maria

Foss (Foss 1938). Resembling hunter-gatherer burials unearthed from other Northern European Stone Age burial sites (Gurina 1956; Oshibkina 1989; Larsson 1989; Larsson & Zagorska 2006), the Kubenino burials were also partly furnished with ochre, as well having rich grave assemblages of bone, antler, and stone artefacts (Foss 1938, 75). What was remarkable in the Kubenino materials, how-



**Figure 1.** Kubenino burial 3 *in situ*. Photo by unknown photographer/Property of State Historical Museum, Department of Written Sources, fund 487, section 23, number 72.

ever, was the positioning of three individuals in a prone position, i.e. on their stomach (Fig. 1). Since prone burials are often associated with negative concepts such as punishment or marking outcast status (Arcini 2009), the Kubenino burials were initially calling for the interpretation of deviant burial.

Deviant or non-normative burials are usually associated with bizarre practices such as decapitations, or strange body positions that differ from the normative burial ritual of the respective period, region, and/or cemetery (Murphy 2008). The individuals buried in this way can include criminals, women who died during childbirth, unbaptized infants, people with disabilities, and supposed revenants, to name but a few. It is noteworthy, however, that studies dealing with deviant burials have been primarily concerned with the Iron Age or historical periods (e.g. Murphy 2008; Gardela 2015; Vargha 2017; Moilanen 2018;

see, however, Strassburg 2000), i.e. periods with written records. When working with deep prehistory like the Stone Age, the picture becomes more blurred. Indeed, even if the phenomenon of a prone burial position does exist during the Stone Age, it is nevertheless unclear whether it was related to same negative connotations as prone burials from later periods. Moreover, without being able to access written records or living tradition, can we even recognize what is a normative or a non-normative mortuary practice?

In this paper, we aim to understand whether the Kubenino burials differ from the normative burial ritual of their respective period and region, by exploring how common the practice of a prone burial was among the Mesolithic and Neolithic hunter-gatherer populations of the northern European boreal zone. Furthermore, by comparing the Stone Age prone burials to inhumations in other

body positions, we will explore whether this practice can be defined as a deviant mortuary practice. As a further tool of interpretation, we will also use ethnographic analogues from historical hunter-gatherer and pastoralist populations of northern Eurasia. Even though the use of ethnographic analogues have been criticized for casting an ethnographic schema back in time (e.g. Insoll 2004, 53–59), the use of this approach has nevertheless been widely accepted and used in archaeology (e.g. Zvelebil 2003; Lahelma 2008, Mannermaa 2008, Conneller 2013; Kirkinen 2015), and offers a much needed substitute for a written record or a living tradition.

## **MESOLITHIC-NEOLITHIC HUNTER-GATHERER MORTUARY PRACTICES IN THE EUROPEAN BOREAL ZONE**

To put the Kubenino burials into context, we will begin by offering a short introduction to the mortuary practices of the Mesolithic and Neolithic hunter-gatherers in the European boreal zone. According to recent archaeological studies, the hunter-gatherer populations of the European boreal zone buried their dead with varying and complex practices (e.g. Nilsson Stutz 2003; 2006; Mannermaa 2008; Larsson 2009; Ahola et al. 2016; Törnv 2016). The dead were, for example, given inhumations and cremations, but at the same time scattered loose human bones have also been documented from contemporary settlement sites. In prior studies, loose human bones with or without cut marks have often been interpreted as evidence of cannibalism (Sørensen 2016, 65 with cited references) or destroyed

burials (e.g. Foss 1938). Recently, however, an interpretation relating to other types of mortuary rituals (e.g., air burials) and post-mortem manipulation has been favoured (Nilsson Stutz 2014; Törnv 2016).

From an archaeological perspective, the most common hunter-gatherer mortuary tradition is an inhumation placed in a shallow pit that corresponded to the physical size of the deceased. These inhumation burials have been discovered as solitary graves, settlement site graves, and as cemeteries (e.g. Gurina 1956; Larsson 1988; Zagorskis 2004 [1989]; Törnv 2016; Ahola 2017a). According to radiocarbon dates (e.g. Zagorska 2006; Piezonka et al. 2014), the same cemetery sites were sometimes used for long periods of time, suggesting that memory and past generations played a significant role in hunter-gatherer funerary practices (Ahola 2017b). Since archaeological evidence also suggests the presence of post-mortem body manipulation and secondary burials (Larsson 2009; Törnv 2016), the mortuary practices seem to have been conducted in multiple episodes at least in some cases.

According to archaeo-thanatological analyses (Nilsson Stutz 2003; 2006; Törnv 2016), the dead were usually carefully positioned in the grave in a lifelike manner, and sometimes placed on platforms or paddings. In some cases, the body was also wrapped. It also seems that variation in body positioning was a norm (Törnv 2016). However, even though the body could be arranged in various ways, extended supine position and flexed position seem to dominate (Nilsson Stutz 2003, 333–335; Löhms 2007, 37–40). In many cases, the initial body position seems to imitate a sleeping position (Törnv 2016, fig. 80).

In most cases, the hunter-gatherer inhumation burials were furnished with a variety of grave goods and ochre. The grave goods include, for example, tools and decorations made of bone and antler (e.g. Gurina 1956; Zagorskis 2004 [1989]; Kostyleva & Utkin 2010) along with artefacts made of stone and amber (e.g. Zagorska 2001; Ahola 2017a). In some cases, animals or parts of animals – for example bird wings – have also been placed in the graves (Mannermaa 2008). Curiously, pottery does not seem to be common in hunter-gatherer burial contexts (Larsson 2009; Ahola 2017a).

### **‘NORMATIVE’ AND ‘DEVIANT’ IN MESOLITHIC-NEOLITHIC HUNTER-GATHERER MORTUARY PRACTICES**

Considering the complexity of Mesolithic and Neolithic hunter-gatherer mortuary practices, tracing normative and non-normative burials is a difficult task. Since an inhumation burial in a cemetery is something very common to many modern cultures, it is easy to interpret such a tradition as a normative mortuary practice (cf. Nilsson Stutz 2014). However, as Mari Törv (2016, 232) has pointed out, the total of all known European Mesolithic hunter-gatherer inhumation burials does not even amount to one generation of population. Even though many sites are not totally excavated – or even discovered – this phenomenon nevertheless suggests that the practice of an inhumation burial seems likely to be a marginal burial concept among Mesolithic and Neolithic hunter-gatherers (e.g. Nilsson Stutz 2014; Törv 2016, 336–337).

The idea of Mesolithic and Neolithic hunter-gatherer inhumation burials as deviant burials is not new. In fact, prior studies from the 1950s onwards have already suggested that only very special people, such as shamans, would have received an inhumation burial, while the major part of the population was treated according to differing mortuary practices (e.g. Gurina 1956; Edgren 1966; O’Shea & Zvelebil 1984). According to Jimmy Strassburg (2000), instead of shamans, these inhumation burials could also represent the feared and rejected outcasts of the society. Considering all the ritual activity at hunter-gatherer cemeteries – votive deposits (Zagorska 2001; Kostyleva & Utkin 2010), the existence of multiple fire places (e.g. Vikkula 1987; Butrimas 2012), along with the location of the burials in a close vicinity of settlements – it seems reasonable to assume, however, that the dead given an inhumation burial were rather honoured than rejected. This line of interpretation is also supported by the above-mentioned core mortuary practices that can be connected with positive associations, such as care, connection, and body integrity (Nilsson Stutz 2003; Nilsson Stutz 2010; Ahola 2015; Törv 2016).

To sum up, when we consider the hunter-gatherer burials from the perspective of normative and deviant mortuary practices, two factors arise. Firstly, the low amount of known inhumation burials suggest that this mortuary practice might have itself been a marginal burial concept: a deviant burial. Secondly, archaeological evidence from these burials suggests that these people were nevertheless buried with positive associations, such as care and body integrity. Accordingly, when we consider the prone burials within





**Figure 2.** Sites mentioned in this article. Map by Kristiina Mannermaa (source for background map: <https://mapswire.com/maps/europe/europe-physical-map-blank-large.jpg>).

this tradition, we are already dealing with an overall context of non-normative burials. By piecing together the total amount of prone burials from the hunter-gatherer burial sites, we can see how common this practice was and, consequently, whether we are dealing with a marginal practice within a non-normative practice. Furthermore, by comparing e.g. the grave structures and burial customs of the prone burials to burials in more common body positions, we can also see whether there are further differences in these burials. These differences might give us a clue as to why the prone burial position was practiced.

## THE KUBENINO SITE

### *The site*

Now that we have set the scene, it is time to return to the Kubenino site. The multiperiodic Stone Age settlement site of Kubenino is situated roughly 4 km to the south from the town of Kargopol, the capital of the Kargopol district, Arkhangelsk region, Russian Federation (Fig. 2). The site is located on the right shore of the Onega River, which runs from Lake Lacha to the White Sea. It is situated on a slightly elevated area, which extends approximately 500 m along the river bank, and is bordered by two streams on both sides (the Northern stream has the name Polyanochney or Polyanostniy – ‘the meadow one’).

The first excavations were conducted at the site by Maria Foss during the 1930s (Foss 1938), and continued sporadically for several decades through the 1970s under several site directors. According to data from the 1930s to 1970s (Foss, 1938; Kozyreva 1967; Kuratov et al 1976), the settlement territory was partly covered with bushes and the dominant plant type throughout the site was grass. The cultural layer started right under the modern surface, and has a homogenous character: humified soil of black colour with a thickness of ca. 40 cm. The settlement area seems to have been damaged by river waters along the shoreline (Polyakov 1882, 9–10); for example, Foss's excavation pits were completely merged with waterline (Fig. 3). In fact, the Kubenino

site might contain several occupation phases, according to the changing river level (Oshibkina 1978, 62). There is no doubt, however, that the place itself was good for year-round fishing. Indeed, such a location is typical for hunter-gatherer settlements of Russian Plain forest zone (Oshibkina 2003, 243).

During her excavations, Foss studied an area of approximately 600 m<sup>2</sup> and revealed the remains of a row of features belonging to different chronological stages: a rounded shallow dwelling pit, slightly dug into the intact clay layer, several open-air fireplaces, and a workshop for polished tools. The find material of the site consisted of numerous ceramic sherds (Ceramics with pit and comb decoration dating to 5th–3rd Millennium BC



**Figure 3.** Kubenino site under excavation in 1930. *Photo by unknown photographer/Property of State Historical Museum, Department of Written Sources, fund 487, section 18, number 205.*

prevails among them), stone tools and flakes, bone and antler artefacts, and personal ornaments, such as tooth pendants and slate rings, that date mainly from the 5th Millennium to the 3rd Millennium BC. Some flint tool forms, however, could also derive from the (pre-ceramic) Final Mesolithic period, dating to the 6th Millennium BC.

### *The Kubenino burials*

Aside from the Stone Age settlement material, the Kubenino site also yielded several fragments of human bones along with remains of six articulated skeletons, of which three were buried in a prone position and three in a supine position (Foss 1938; Smirnov 1940; Kuratov et al. 1976). The Kubenino supine burials were discovered at a depth of ca. 20–30 cm with their heads to the south (Smirnov 1940; Kuratov et al. 1976). Two of the burials lacked burial goods (burials 4 and 6) (Smirnov 1940; Kuratov et al. 1976), while one (burial 5) was accompanied by bone tools (Smirnov 1940).

The Kubenino prone burials were dug to a depth of ca. 40 cm, and in all the prone burials the individuals were positioned slightly crouched from the elbows, with wrists under pelvis<sup>1</sup> (Foss 1938, 75). According to recent calibrated AMS dates obtained from bone artefacts deriving from burials 2 and 3, the prone burials date to the edge of 6th and 5th Millennium BC (Kashina et al. 2017), making them possibly coeval with the ceramic tradition (the so-called ‘Kargopol’ ceramics) preceding the Comb Ware and Pit-Comb Ware traditions (e.g. Tarasov et al. 2017).

Of the three prone burials, two (burials 2 and 3) contained rather well-preserved human skeletal material and grave goods mainly consisting of bone, antler, and teeth. In con-

trast to these burials, burial 1 did not contain any finds, and the human remains, especially the upper part of the skeleton, was only poorly preserved (Foss 1938, 78). The individual inhumed in burial 3 had received the richest grave inventory, consisting of several bone, antler, and flint artefacts. Burial 3 was also the only burial at the Kubenino site that was furnished with ochre, discovered at the bottom of the burial pit together with small charcoal fragments (Foss 1938, 78).

According to Foss (1938, 78), the individual buried in burial 3 was a “Stone Age giant” with a height of 1.93 meters and was positioned with his head to the SSE. This ‘giant’ was treated with numerous bone ornaments, discovered mainly from the neck and pelvis area of the skeleton, as well as with several bone arrowheads and other bone and flint artefacts. This burial also included a roughly made human figurine (Fig. 4). Curiously, aside from the neck and pelvic region, many of the finds in the burial were discovered from around the head area of the deceased. For example, a fragmented flint spear point was discovered underneath the skull, with its other fragment positioned to the left of the skull (Foss 1938, 78). This artefact (Fig. 5) was missing the middle part, which makes us suggest that it was intentionally broken. Remarkably, according to recent zooarchaeological analysis conducted by the third author, many of the bone and antler artefacts were also deliberately fragmented. For example, the tips of several bone points from the burial were also broken (Fig. 6).

Differing from the large individual inhumed in burial 3, according to Foss (1938, 78) the length of the skeleton in burial 2 was 1.5 meters. This individual was positioned



with the head towards the SSE, and since a 2–3 cm thick layer of humus was documented underneath the skeleton, the burial pit was possibly furnished with some organic material. The find material of the burial consisted of several bone and antler artefacts along with a unique find of a fragmented human figurine (Fig. 7), discovered directly on the left tibia bone (Foss 1938, 78). Similarly to the deceased, the figurine was also positioned in a prone position.

### MESOLITHIC AND NEOLITHIC HUNTER-GATHERER PRONE BURIALS FROM NORTH EUROPE

In addition to re-visiting the Kubenino burial finds, we also searched for other prone burials from the respective period and region. The data was collected solely from written sources (i.e. publications and field reports), and no new analyses were conducted. As a result of this search, we discovered a total of 28 ad-

ditional prone burials from nine sites (Table 1). Most of the sites (Ivanovskoye VII, Kara-vaikha, Minino, Mys Brevenniy, Sakhtysh IIA and Sakhtysh VIII) are located in Russia, two of the sites in Baltia (Kreiči<sup>2</sup> and Zvejnieki), and one in Scandinavia (Skateholm II). As most of the Stone Age prone burials lack radiocarbon dates, the burials have been given a relative date that, in many cases, covers several millennia. According to stratigraphy and archaeological finds and contexts (Briussov 1961; Oshibkina 1978; Utkin & Kostyleva 2001; Kostyleva & Utkin 2010), however, prone burials from the Russian territory most probably date to ca. 6000–4500 cal BC.

When the Kubenino prone burials are observed together with these other prone burials from the respective period and region, several points of connection can be made. Firstly, prone burials occur together with inhumations placed in other positions, both in settlement sites and cemeteries. Secondly, Mesolithic and Neolithic hunter-gatherer prone burials seem to be furnished in a very similar manner to other inhumations, implying that some of the individuals would have received grave goods and ochre while other not. This is also the case with individuals buried in other positions (e.g. Gurina 1956; Larsson 1989; Larsson & Zagorska 2006; Kostyleva & Utkin 2010). Thirdly, similarly to inhumations in other body positions, prone burials also represent both single inhumations and multiple



**Figure 4.** Potential human figurine from Kubenino burial 3. *Photo by I. Seden'kov/State Historical Museum, Moscow, Russia.*



**Figure 5.** Partial flint knife from Kubenino burial 3. *Photo by I. Seden'kov/State Historical Museum, Moscow, Russia.*



**Figure 6.** Needle-shaped bone points from Kubenino burial 3. *Photo by I. Seden'kov/State Historical Museum, Moscow, Russia.*

**Figure 7.** Human figurine from Kubenino burial 2. *Photo by I. Seden'kov/State Historical Museum, Moscow, Russia.*

burials of men, women, and children from different age groups. It does seem, however, that adult or mature men dominate the material.

What is remarkable, however, is that in most cases prone burials represent only a fragment of the burials unearthed from these sites. In fact, the Kubenino site, with three supine burials and three prone burials, is the only exception to this pattern. Accordingly, the prone position seems generally to be a marginal mortuary practice that can thus be interpreted as a deviant. Moreover, when the position is observed in the light of more common burial positions, it is evident that the position of the prone individuals did not aim to mimic a life-like position. On the contrary, the bodies were often placed in an extended prone position, with either one or both hands positioned beneath the pelvis. Consequently, the prone burials do not bear any resemblance to, for example, people sleeping on their stomach.

However, at the same time it is evident that the individuals were also buried with care. For example, in the case of the Kubenino prone burials, 'the giant' received rich grave goods, some of which seems to have been intentionally broken, and ochre. These practices – reported also in other hunter-gatherer burial sites (e.g. Zagorskis 2004 [1989], 83; Ahola 2015, 35; 2017; see also Chapman & Gaydarska 2007, 95) – suggest that a range of activities took place at the time of the interment. This, on the other hand, sets these



Mesolithic and Neolithic prone burials apart from the prone burials recorded from later periods. Indeed, in many of these later burials, the body of the individual has clearly been carelessly tossed into the burial pit and shamed, for example by beheading the body (e.g. Murphy 2008; Arcini 2009).

It thus seems plausible that even if the prone position can be defined as deviant, it might not have been related to negative meanings among the Stone Age hunter-gatherers. In fact, according to Leszek Gardela (2015), a cross-cultural exploration of the prone burial tradition has shown that the practice was endowed with a wide range of meanings – and not necessarily always with negative connotations. Indeed, even though in some hunter-gatherer prone burials (Zvejnieki burials 37, 39 and 70, Mys Brevnenny burial 2 and Karavaikha burial 28), the body of the individual was also covered with large

**Table 1.** Mesolithic and Neolithic hunter-gatherer prone burials from European boreal zone.

Site	Location	Prone burials	Relative dating	Radiocarbon dating (BP)	Short description	Inventory	Noted pathologies	Literature
Ivanovskoye VII (Settlement site with five burials)	Russia	Burial 4	6th millennium BC		male (mature), extended prone position with hands under pelvis, traces of chopping on leg bones, long leg bones of an adult woman discovered under the body	-	-	Kostyleva & Utkin 2010
		Burial 5	6th millennium BC		female (adult), extended prone position with hands under pelvis, body halved (upper part of the body positioned upright and lower part of the body horizontally), lower parts of limbs and feet absent, burnt remains of wooden pole between the two body parts	-	Acetabulum asymmetry, different length of thighbones (lameness?)	Kostyleva & Utkin 2010
Karavaiha (settlement site and a cemetery of 38 burials)	Russia	Burial 28	6th-5th millennium BC		female (young adult), extended prone position with hands under pelvis, tightly wrapped, several large stones placed on the body, small fireplace with burnt animal bone upon the burial	-	-	Brussov 1961; Utkin & Kostyleva 2001
Kreici (settlement site and a cemetery of ca. 20 burials)	Latvia	Burial 21	late 5th-3rd millennium BC		head SE			Zagorskis 1961
		Burial 22	late 5th-3rd millennium BC		head SE, a pit with pottery discovered under the burial			Zagorskis 1961
Minino (cemetery of ca. 20 burials)	Russia	Burial 4	6th-5th millennium BC	(Aar-5787) 6680±50; (Aar-5788) 6165±45	male (adult), extended prone position with hands under pelvis, ochre at the head area	Fragmented bone point (barbed)	-	Makarov 2007
Mys Brevennyi (settlement site with eight burials)	Russia	Burial 2	6th-5th millennium BC		adult (sex not determined), extended prone position with hands under pelvis, large stone placed on the pelvic area	Two flint arrowheads	-	Oshibkina 1978
Sakhtysh Ila (settlement site with a multiperiodic cemetery of 15 burials)	Russia	Burial 12	6th millennium BC	(Gin-7185) 6110±200	male (adult), extended prone position with hands under pelvis	-	-	Kostyleva & Utkin, 2010; Piezonka et al. 2013
		Burial 22	6th millennium BC		female (young adult), extended prone position with hands under pelvis, tightly wrapped	Two bone daggers, tooth pendant and a barbed point (?)	-	Kostyleva & Utkin 2010
		Burials 61A & B	6th millennium BC	61A: (Aar-15052) 6356±23	Burial 61A: female (young adult), extended prone position with hands along the body, partly destroyed, ochre beneath the skull Burial 61B: child (2 years old) in extended (?) prone position, placed between the hips of burial 61A	Bone awl, knife and unidentified bone tool	-	Kostyleva & Utkin 2010; Piezonka et al. 2013

Sakhtysh VIII (settlement site and a multiperiodic cemetery of ca. 20 burials)	Russia	Burial 29	6th millennium BC		male (adult), extended prone position with hands under pelvis	-	-	Kostyleva & Utkin 2010
Skateholm II (settlement site and a cemetery of ca. 60 burials)	Sweden	Burial 33	6th-5th millennium BC		male (mature?), extended prone position with right upper limb rotated inward and shoulders projected upward, head and upper left side tucked against the wall of the grave	Several bone points (both by the skeleton and in the filling)		Larsson 1988; Nilsson Stutz 2003
Zvejnieki (settlement site and a multiperiodic cemetery of ca. 300 burials)	Latvia	Burial 37	6th millennium BC		male (adult), extended prone position, left arm stretched by the side, right forearm drawn up to humerus with fingers at shoulder, large stone at feet	Two bone pendants	Left clavicle with possible indications of tuberculosis on posterior border of medial articulation, occlusal caries on 2nd molar of lower jaw	Zagorskis 2004 [1989]
		Burial 39	6th millennium BC	(Ua-3635) 6775±55	male (mature), extended prone position, face turned to right, arms close by sides, legs crossed at knees, small amount of ochre around head, two large stones by the head		Arthrothis with Pommer's knots on humerus	Zagorskis 2004 [1989]; Zagorska 2006
		Burial 43	6th millennium BC		infant, extended prone position, middle of the skeleton destroyed, intensive ochre surrounding the skeleton	38 perforated tooth pendants and two incised pendants at pelvis and middle above and below the skeleton		Zagorskis 2004 [1989]
		Burial 63	6th millennium BC		male (adult/mature), extended prone position with head turned to right, left arm stretched and partly under pelvis, right arm flexed with elbow projecting outwards and hand under waist, small amount of ochre around head, right elbow and legs		Traumatic lesions on left parietal	Zagorskis 2004 [1989]
		Burial 70	8th-7th millennium BC		male (adult/mature), extended prone position with head turned to right, arms by the sides, two large stones covered the head and chest and one stone the toes of the individual			Zagorskis 2004 [1989]
		Burial 90	6th millennium BC		badly damaged skeleton in extended prone position (upper skeleton down to pelvis missing), positioned across burials 91-92 (collective grave)	two flint flakes		Zagorskis 2004 [1989]
		Burial 177	late 6th-5th millennium BC		male (mature), extended prone position, arms by the sides, right forearm below the pelvis, left forearm on the pelvis, legs together	bone arrowhead		Zagorskis 2004 [1989]

	Burials 178-182	late 6th-5th millennium BC	Burial 179: (Ua-19807) 5895± 70 Burial 182: (OxA-5970) 6195± 60	Collective burial of five males, all in prone position. Burial 178: male (adult), placed along the south side of the grave in extended prone position, right leg along the S side of the grave, left knee projecting sideways, ochre at head region. Burial 179: male (adult), extended prone position with head turned to left, right arm by the side, below ribs of burial 178. Burial 180: male (mature), laid in prone position along the S side of the grave, turned slightly to left side, arms by the side, right leg slightly flexed, left leg missing, traces of ochre around skeleton. Burial 181: male (adult), placed next to burial 180 with head turned to right, arms by the sides, right elbow projecting slightly outwards. Burial 182: male (mature), extended prone position, head to right, arms by the sides, knees and feet close together, small amount of ochre around skeleton	Burial 178: fragmentary tooth pendant & toothed spearhead	Burial 182: signs of injury on skeleton (four round holes in pelvis, punctured from front; lumbar vertebra shot through and flint flake lodged in third thoracic vertebra). Burial 181: healed injury on forehead, first lumbar vertebra with stage II deformative spondylosis with Pommer's knots. Upper two cervical vertebrae with indications of synostosis	Zagorskis 2004 [1989] ; Zagorskis 2006
	Burial 298	late 6th-5th millennium BC		male (adult), extended prone position, arms by the sides, skeleton surrounded by black earth with small amount of ochre around the skull			Zagorskis 2004 [1989]
	Burial 207	late 6th-3rd millennium BC		infant, extended prone position, head turned to left, right arm by the side, left arm slightly flexed with forearm under pelvis, thick layer of ochre around the skeleton, part of collective grave of four individuals (burials 206-209), other individuals either on supine position or on extended position by the sides of the grave, a votive deposit consisting of 33 objects at the feet of burial 207	biserial harpoon, several flint objects and flakes, fragmentary bone point and fragments of amber tablet		Zagorskis 2004 [1989]
	Burial 268	late 5th-3rd millennium BC		male? (adult), extended prone position, arm bones poorly preserved, legs turned slightly to right			Zagorskis 2004 [1989]
	Burial 287	late 5th-3rd millennium BC		female (mature), extended prone position, head turned to left, lower part of the body destroyed by later disturbances, an infant placed between the knees of the female			Zagorskis 2004 [1989]

stones (Table 1) – a tradition that brings to mind magical precautions against evil forces from later historical times (e.g. Gardela 2015) – nothing else in the burials suggest that these individuals were rejected. In fact, since large stones have also been used to cover the graves of individuals placed in a supine position in all of the sites in question (Oshibkina 1978; Zagorskis 2004 [1989], 17; Utkin & Kostyleva, 2001, 58), this practice cannot be connected solely with prone burials.

Also differentiating the Mesolithic-Neolithic hunter-gatherer prone burials from the deviant burials of later periods is the fact that traces of violence or other precautions taken against possible revenants are relatively rare (see however Ivanovskoe VII burial 5 and Zvejnieki collective burial 178–182 in Table 1). Indeed, although Lars Larsson (1988, 44) has interpreted the flint arrowheads discovered in the Skateholm prone burial (Table 1) as having been shot at the grave, the way the projectile points ended up in the filling is unclear. Aside being shot, these items could also have been intentionally positioned in the filling – a phenomenon recorded, for example, from the Finnish territory (Ahola 2017). Furthermore, according to Gardela (2015, 113–114), in most folkloristic instances describing the fear of the undead, the deceased is placed in a prone position (and sometimes further mutilated) if the deceased was suspected of, for example, vampirism and the grave was thus reopened. However, in the case of the Skateholm burial – the only prone burial subjected to archaeo-thanatological analysis in which it is possible to determine whether the burial is a primary or a secondary (e.g. Dugday 2009) – the individual was clearly placed initially in a prone position and the burial pit

filled immediately (Nilsson Stutz 2003, Appendix 1).

## HIDING FACES?

To understand the underlying reasons to bury the deceased on its stomach within a hunter-gatherer context, we turned to ethnographic materials. However, when reviewing the ethnographic literature, it soon became evident that prone burials – indeed any burial position – were only rarely mentioned. Similarly, we did not find any accounts of deviant burial practices. Although this could indicate that such mortuary practices did not exist among historical hunter-gatherers or pastoralists, a prone burial has nevertheless been discovered, for example, from a Medieval Yakut burial ground (Bravina et al. 2016). According to ethnographic accounts (Bravina et al. 2016, 243 with cited references), among the Yakuts this practice was reserved for the dangerous deceased that included, for example, shamans and suicide victims. Curiously, according to Estonian folklore, the prone position is also connected with shamans. Indeed, according to this tradition (Wiedemann 1878, 443–444 according to Waronen 1898, 51) the return of a shaman's soul from a shamanistic journey could be prevented by placing the body of the trancing shaman in a prone position. Even though this folkloric account does not deal with death or mortuary practices, it does imply that the souls of potent individuals were feared, and that special actions could be taken in order to control these individuals.

Considering the above, it could be plausible that the prone position was used as a precaution to diminish the powers connected with special or potent individuals. In fact, although



we did not encounter prone burials from other sources, one reoccurring practice did catch our eye; it seemed that many hunter-gatherer and pastoralist populations of northern Eurasia thought that the soul<sup>3</sup> was located in the eyes of the individual (Harva 1933, 175). It was for this reason that shamans commonly wore masks, to hide their souls from the spirits they encountered. For the same reason, the eyes or the face of the deceased were also covered with, for example, fish skins, cloth, or different items that were placed on top of the eyes (Harva 1933, 192–193).

Interestingly, the practice of covering the eyes and the face of the deceased is also present in Stone Age hunter-gatherer mortuary practice. For example, at the Zvejnieki cemetery, amber ornaments were found in the eye sockets of the deceased, in burials dating to the late 5th–3rd Millennium BC; the head region of these individuals was also intensively strewn with ochre, and in some cases plastered with a layer of clay (Zagorska 2001, 112; Nilsson Stutz et al. 2013). This tradition has also been recorded from 4th Millennium BC hunter-gatherer burials in the Finnish territory, and was interpreted as the presence of a death mask (Edgren 2006). The tradition could, however, also be associated with the uses of masks for transformation and changing identity (cf. Pizzorno 2010). Similar potential masks have also been unearthed from prior hunter-gatherer burials dating to the 7th Millennium BC, e.g. from the cemeteries of Yuzhniy Oleniy Ostrov in Russia (grave 115 of an adult man) (Gurina 1956) and Donkalis in Lithuania (grave 2 of an adult man) (Butrimas 2002; 2016) (Fig. 2). In these burials, animal tooth pendants were found on the eyes and face of the deceased, probably

indicating a mask or other headgear, but evidence of clay or other material used for the gear has not been observed. The head region of these individuals was nevertheless intensively strewn with ochre.

In the light of these examples from hunter-gatherer burials, it seems reasonable to assume that the practice of hiding the face and eye area was sometimes considered significant. Indeed, this practice suggests that there was also ambivalence within the hunter-gatherer mortuary practices, and the dead body or the powers connected with the liminal stage of the corpse (cf. van Gennep 1960) were considered as harmful. Curiously, a similar tradition can even be seen in many anthropomorphic items in which the eyes are represented very vaguely. For example, a human-like antler figurine discovered from Estonia and dated to the end of the 7th Millennium BC (Jonuks 2016) seems to lack eyes all together, while in the Kubenino figurines the eyes are marked by an empty space beneath pronounced brows (Fig. 7). Although we do not know whether the eyes were marked by, for example, unpreserved organic materials or with colours, it does seem that they were nevertheless presented differently than the other facial features. The most striking example, however, comes from the Kubenino site, where the figurine discovered in burial 2 (Fig. 7) was also placed on its stomach. The practice of burying the figurine in a similar body position as the deceased does seem to imply that the item possessed similar qualities as the buried individual.

In the light of the above discussion, it could be suggested that the practice of placing the individual in a prone position relates to a tradition in which it was important to



hide the face of the deceased. In fact, a similar interpretation has already been suggested for the case of Early Medieval prone burials from Poland (Gardela 2015). According to Gardela (2015, 109), one plausible explanation for these prone burials might have been the widespread belief in the so-called evil eye, a malevolent gaze of the dying or the dead which could bring misfortune or even death. Perhaps this tradition is indeed a long one, and in a Stone Age context was practiced by hiding the face with a mask – or by placing the dead in a prone position.

However, since masks and prone burials both represent rare mortuary traditions among the Mesolithic and Neolithic hunter-gatherers, this practice was clearly applied only in special cases. One reason might have been the presence of a deformation that, instead of being considered as a negative trait, was something that made the individual special or potent. Such an interpretation has already been made in cases where a Stone Age individual or individuals with severe pathologies has been buried with an exceptionally rich inventory (Porr & Alt 2006; Trinkaus & Buzhilova 2018). For example, the adult woman buried in the famous Bad Dürrenberg Mesolithic burial site (Fig. 2) suffered from an atlar anomaly that could have caused variants of altered states of consciousness in the individual (Porr & Alt 2006). This, on the other hand, may suggest that the individual was a shaman. Based on the animal tooth pendants and the Cervidae antlers found in the head region, the probable shaman might also have worn a headpiece that covered the eyes (Grünberg 2001, 156; Porr & Alt 2006, 396).

Although evidence of pathologies or deformations are not common in our material,

they are nevertheless present in some of the prone burials (Table 1). It must be noted, however, that evidence of deformations or pathologies were not systemically collected from the other burials of the sites. Thus, we do not know how many burials in other body positions show evidence of, for example, deformation. Moreover, the trait that made the individual somehow potent might have also been subtler. Indeed, even if Foss did not note any pathologies in the Kubenino individuals, the same line of thought could be applied to burial 3, in which the individual was of considerable size. Indeed, even though the size did not affect the health of the individual, it could have nevertheless been considered to be a similar anomaly, and thus contributed to the chosen burial position.

It must also be noted that even if the archaeological evidence suggests that death masks or other items were only rarely used to cover the faces or eyes of the buried individuals, such items could also have been made of perishable materials. For example, at the above-mentioned Yakut burial ground, birch bark was used to cover the head of one individual (Bravina et al. 2016, 252–253). Additionally, in the Finnish territory, some sporadic Neolithic hunter-gatherer burials show evidence of a tradition in which the head region was covered solely with clay, or with clay and items made of unperishable materials (Ahola 2017, 209).

## CONCLUSIONS

In this paper we have compiled together the current data on Mesolithic and Neolithic hunter-gatherer prone burials from the European boreal zone. By focusing especially

on the Kubenino site in NW Russia, we have explored whether the individuals buried face down represent a deviant burial practice or not. By observing the Kubenino burials in the light of other Mesolithic and Neolithic hunter-gatherer prone burials, we were able to conclude that the number of individuals placed on their stomach is extremely small compared to burials in other body positions. Accordingly, among the Stone Age hunter-gatherer inhumation tradition of the European boreal zone, prone burials clearly represent a marginal burial practice.

However, when the practice of a prone burial was given a closer look, it became evident that aside from the body position nothing else calls for an interpretation as deviant. Rather, it seems that the individuals placed in a prone position were otherwise treated similarly to other burials, with the same varying grave goods and practices as the other inhumations. Thus, differing from the revenant burials of later periods, it seems that the hunter-gatherer individuals that were given a prone burial were not intentionally humiliated. This, on the other hand, suggests that even though the practice might have been deviant, it might not have been associated with negative concepts.

According to our data, some of the Mesolithic and Neolithic hunter-gatherer prone burials were, however, associated with evidence of violence or mutilation, along with pathologies that would have been visible during life. Such evidence is present, for example, in the Zvejnieki multiple burial 178–182 and in the Ivanovskoe VII prone burials 4 and 5. It seems, however, that rather than seeing these people as revenants, they might have been considered as potent or special.

Since these people might have possessed special powers in life, their dead bodies might have been considered as potentially dangerous and thus in need of special treatment.

Although speculative, we suggest that the tradition of a prone burial was a way to diminish the powers attached to the potentially dangerous dead, by hiding the face or the eyes of the deceased. By observing the tradition in the light of both the ethnographic and archaeological record, we noted that this practice was applied to special people and conducted in multiple ways. For example, both the archaeological and ethnographical evidence show that, occasionally, the face of the dead individual was covered with, for example, cloth, clay, birch bark, or artefacts. In addition to using artefacts to hide the face and eyes, the tradition of placing the individual on its stomach could have been a way to make the eyes and the face invisible. What is remarkable is that in a Mesolithic-Neolithic hunter-gatherer context the practice of hiding the face and the eyes was not applied only to humans, but also to human-like figurines and other items.

To conclude, we suggest that Mesolithic-Neolithic hunter-gatherer prone burials from the European boreal zone represent a deviant burial practice within an inhumation burial tradition that can itself already be referred to as deviant. In this sense, it is evident that the hunter-gatherer mortuary practices are not only numerous but also very complex, and in order to further understand the mortuary practices further study is needed. In the future, the Mesolithic and Neolithic hunter-gatherer prone burials should be subjected to osteological, paleopathological and archaeo-thanatological analyses, and new ra-

diocarbon dates and isotopic analyses should be obtained. If suitable material is available, ancient bacteria DNA could also be traced from the individuals buried in a prone position. In theory, this method could reveal pathologies that are invisible to the naked eye, but which nevertheless could have contributed to the chosen funerary practice.

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## REFERENCES

- Ahola, M. 2015: Tracing Neolithic funerary practices from Finnish ochre graves – a case study from Kukkaroski Comb Ware burial ground. *Thanatos*, 4, 2/2015, 23–41.
- Ahola, M. 2017a. The material culture of Finnish Stone Age hunter-gatherer burials. *Fornvännen*, 4/2017, 201–215.
- Ahola, M. 2017b. Memory, landscape & mortuary practice: understanding recurrent ritual activity at the Jönsas Stone Age cemetery in southern Finland. *Acta Archaeologica*, 88/1, 95–120.
- Ahola, M., Salo, K. & Mannermaa, K. 2016. Almost gone: human skeletal material from Finnish Stone Age earth graves. *Fennoscandia archaeologica*, XXXIII, 95–122.
- Arcini, C. 2009. Losing face. The worldwide phenomenon of ancient prone burial. In *Döda personers sällskap. Gravmaterialens identiteter och kulturellauttryck/On the Threshold. Burial Archaeology in the Twenty-First Century*. Eds. I.-M. Back, I. Danielsson, A. Gustin, A. Larsson, N. Myrberg & S. Thedeén. Stockholm University, Stockholm, 187–202.
- Bravina, R.I., Diakonov, V.M., Bagashev, A.N., Razhev, D.I., Poshekhonova, O.E., Slepchenko, S.M., Alekseeva, E.A., Kuzmin, I.V. & Hodgins, G.W.L. 2016. Early Yakut burials of the fourteenth–seventeenth centuries. *Anthropology & Archeology of Eurasia*, 55 (3–4), 232–268.
- Brinch Petersen, E. & Meiklejohn, C. 2003: Three cremations and a funeral: aspects of burial practice in Mesolithic Vedbæk. In *Mesolithic on the Move. Papers presented at the Sixth International Conference on the Mesolithic in Europe, Stockholm 2000*. Eds. L. Larsson, K. Knutsson, O. Loeffer & A. Åkerlund. Oxbow books, Oxford, 485–493.
- Brusov A.Y. 1961. Karavaevskaya stoyanka. In *Sbornik po arkheologii Vologodskoy oblasti* Ed. Briusov A.Y. Vologda, Vologodskoye knizhnoye izdatelstvo, 72–162.
- Butrimas, A. 2012. *Donkainio ir Spigino Mezolito-Neolito kapinynai. Seniausio laidojimo paminklai lietuvoje*. Vilnius, Vilniaus dailes akademijos leidykla.
- Butrimas, A. 2016. Biržulis lake islands Donkainis and Spiginas Mesolithic cemeteries (West Lithuania). In *Mesolithic Burials – Rites, Symbols and Social Organisation of Early Postglacial Communities*. Eds. J.M. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt and H. Meller. Handesmuseum für Vorgeschichte, Halle (Saale), 195–217.
- Chapman, J. & Gaydarska, B. 2007. *Parts and Wholes: Fragmentation in Prehistoric Context*. Oxford, Oxbow Books.
- Conneller, C. 2013. Power and society. Mesolithic Europe. In *The Oxford Handbook of Archaeology of Death and Burial*. Eds. S. Tarlow & L. Nilsson Stutz. Oxford, Oxford University Press, 347–358.
- Doughty, C. 2017. *From Here to Eternity. Travelling the World to Find the Good Death*. London, Weidenfeld & Nicolson.
- Duday, H. 2009. *The Archaeology of the Dead: Lectures in Archaeothanatology*. Translated by A.M. Cipriani and J. Pearce. Oxford & Philadelphia, Oxbow Books.
- Edgren, T. 1966. Jäkärlä-gruppen. En västfinsk kulturgrupp under yngre stenåldern. *Suomen muinais- muistoyhdistyksen aikakauskirja* 64. Helsinki: Weilin+Göös.
- Edgren, T. 2006. Kolmhaara reconsidered. Some new observations concerning Neolithic burial practice in Finland. In *Back to the Origin. New Research in the Mesolithic–Neolithic Zvejnieki Cemetery and Environment, Northern Latvia*. Eds. L. Larsson & I. Zagorska. Almqvist & Wiksell International, Stockholm, 327–336.
- Fahlander, F. 2012. Mesolithic childhoods: changing life-courses of young hunter-fishers in the Stone Age of southern Scandinavia. *Childhood in the Past*, 5, 20–34.
- Formicola, V., Pontrandolif, A., & Svoboda, J. 2001. The Upper Paleolithic triple burial of Dolni Vestonice: pathology and funerary behavior. *American Journal of Physical Anthropology*, 115, 372–374.
- Foss, M.Y. 1938. Pogrebeniya na stoyanke Kubenino. *Trudy Gosudarstvennogo Istoricheskogo Muzeya*, VIII, 73–91.

- Gardela, L.** 2015. Face down: the phenomenon of prone burial in Early Medieval Poland. In *Rituals in the Past*. Eds. L. Gardela & A. Pülpánová-Reszczyńska, *Analecta Archaeologica Ressorviensia*, 10. Institute of archaeology Rzeszów University, Rzeszów, 99–136.
- Gray Jones, A.** 2011. Dealing with the dead: Manipulation of the body in the mortuary practices of Mesolithic north west Europe. PhD Thesis. University of Manchester.
- Grünberg, J.M.** 2001. Die enthauptete 'Schamanin' von Bad Dürrenberg. In *Schönheit, Macht und Tod. 120 Funde aus 120 Jahren Landesmuseum für Vorgeschichte*. Ed. H. Meller. Landesamt für Denkmalpflege und Archäologie, Halle (Saale), 156–157.
- Gurina N.N.** 1956. *Oleneostrovskiy mogil'nik. Materialy i issledovaniya po arkheologii SSSR*, 47. Academy of Sciences of USSR, Moscow-Leningrad.
- Harva, U.** 1933. *Altain suvun uskonto*. WSOY, Helsinki.
- Insoll, T.** 2004. *Archaeology, Ritual, Religion*. Routledge, London.
- Jonuks, T.** 2016. A Mesolithic human figurine from river Pärnu, south-west Estonia: a century old puzzle of idols, goddesses and ancestral symbols. *Estonian Journal of Archaeology*, 20 (2), 111–127.
- Kashina, E.A., Mannermaa, K. & Ahola, M.** 2017. Burials at the Kubenino site: new study after 80 years. Oral presentation at Twer Annual Archaeology Seminar, March 21–25, 2017.
- Kirkinen, T.** 2015. The role of wild animals in death rituals: furs and animal skins in the Late Iron Age inhumation burials in southeastern Fennoscandia. *Fennoscandia archaeologica*, XXXII, 101–120.
- Koivisto, S.** 2010. Luihin ja ytimiin: Pyyntiä ja elämää Itämeren äärellä noin 7500 vuotta sitten. *Helsingin pitäjä*, 31 (2011), 8–21.
- Kostyleva, E.L. & Utkin A.V.** 2010. *Neo-eneoliticheskiye mogil'niki Verkhnego Povolzhya i Volgo-Oskogo mezhdurechya. Planigraficheskiye i khronologicheskiye struktury*. Taus, Moscow.
- Kozyreva, R.V.** 1967. O rabote v Kargopol'skom i Nyandomskom rayonakh Arkhangel'skoy oblasti. *Arkheologicheskiye otkrytiya 1966 goda*, 10–11.
- Kuratov, A.A., Martynov A.Y., Mikhaylovskiy F.A., & Shevel'yov V.V.** 1976. Issledovaniya v Arkhangel'skoy oblasti. *Arkheologicheskiye otkrytiya 1975 goda*, 27–28.
- Krohn, K.** 1915. Suomalaisten runojen uskonto. *Suomalaisen Kirjallisuuden Seuran Toimituksia*, 137. Suomalaisen Kirjallisuuden Seura, Helsinki.
- Lahelma, A.** 2008. *A Touch of Red. Archaeological and Ethnographic Approaches to Interpreting Finnish Rock Paintings*. Iskos 15. The Finnish Antiquarian Society, Helsinki.
- Larsson, L.** 1988. *Ett fångstsmåhålle för 7000 år sedan: boplatser och gravar i Skateholm*. Signum, Lund.
- Larsson, L.** 1989. Big dog and poor man. Mortuary practices in Mesolithic societies in southern Sweden. In *Approaches to Swedish Prehistory. A Spectrum of Problems and Perspectives in Contemporary Research*. Eds. T.B. Larsson & H. Lundmark. BAR International Series, 50. Archaeopress, Oxford, 211–223.
- Larsson, L. & Zagorska, I.** 2006. *Back to the Origin. New Research in the Mesolithic–Neolithic Zvejnieki Cemetery and Environment, Northern Latvia*. Almqvist & Wiksell International, Stockholm.
- Larsson, Å.M.** 2009. *Breaking and Making Bodies and Pots. Material and Ritual Practices in Sweden in the Third Millennium BC*. Aun 40. Uppsala University, Uppsala.
- Lázničková-Galetová, M.** 2016. Perforated animal teeth. In *Dolní Věstonice II Chronostratigraphy, Paleoethnology, Paleoanthropology*. Ed. J. Svoboda. The Dolní Věstonice Studies, 21. Academy of Sciences of the Czech Republic, Brno, 313–322.
- Löhmus, M.** 2007. Mortuary practices during the Comb Ware cultures in Estonia and the problems of their interpretation. In *Colours of Archaeology. Material Culture and the Society. Papers from the Second Theoretical Seminar of the Baltic Archaeologists (BASE) Held at the University of Vilnius, Lithuania, October 21–22, 2005*. Ed. A. Merkevičius. *Interarchaeologia*, 2. Tartu Ülikool, Tartu, 33–48.
- Makarov, A.N.** (ed.) 2007. *Arkheologiya severorusskoy derevni X–XIII vv. Srednevekovyye poseleniya i mogil'niki na Kubenskom ozero*, 1. Nauka, Moscow.
- Mannermaa, K.** 2008. *The Archaeology of Wings: Birds and People in the Baltic Sea Region During the Stone Age*. Gummerus, Helsinki.
- Moilanen, U.** 2018. Facing the earth for eternity? Prone burials in Early Medieval and Medieval Finland (c. AD 900–1300). *Archaeological Review from Cambridge*, 33 (2), 19–36.
- Murphy, E.M.** (ed.) 2008. *Deviant Burial in the Archaeological Record*. Oxbow Books, Oxford.
- Nilsson Stutz, L.** 2003. *Embodied Rituals & Ritualized Bodies. Tracing Ritual Practices in Late Mesolithic Burials*. Almqvist & Wiksell International, Stockholm.
- Nilsson Stutz, L.** 2006. Unwrapping the dead. In *Back to the Origin. New Research in the Mesolithic–Neolithic Zvejnieki Cemetery and Environment, Northern Latvia*. Eds. L. Larsson & I. Zagorska. Almqvist & Wiksell International, Stockholm, 217–233.
- Nilsson Stutz, L.** 2014. Mortuary practices. In *The Oxford Handbook of the Archaeology and Anthropology of Hunter-Gatherers*. Eds. V. Cummings, P. Jordan & M. Zvelebil. Oxford University Press, Oxford, 712–728.
- Nilsson Stutz, L., Larsson, L. & Zagorska, I.** 2013. The persistent presence of the dead: recent excavations at the hunter-gatherer cemetery at Zvejnieki (Latvia). *Antiquity*, 87, 1016–1029.
- O'Shea, J. & Zvelebil, M.** 1984. Oleneostrovski Mogilnik: reconstructing the social and economic organization of prehistoric foragers in northern Russia. *Journal of Anthropological Archaeology*, 3, 1–40.

- Oshibkina, S.V. 1978. *Neolit Vostochnogo Prionezhya*. Nauka, Moscow.
- Oshibkina, S.V. 1989. The Material culture of the Veretye-type sites in the region to the east of the Lake Onega. In *The Mesolithic in Europe. Papers Presented at the Third International Symposium, Edinburgh 1985*. Ed. C. Bonsall. Jon Donald Publishers, Edinburgh, 402–413.
- Oshibkina, S.V. 2003. K voprosu o rannem neolite na severe Vostochnoy Yevropy. In *Neolit-eneolit Yuga i neolit Severa Vostochnoy Yevropy (novye materialy, issledovaniya, problemy neolitizatsii regionov)*. Ed. V.I. Timofeev. Institute for the History of Material Culture, Saint-Petersburg, 241–254.
- Pentikäinen, J. 1990. *Suomalaisen lähtö. Kirjoituksia pohjoisesta kuolemankulttuurista*. Finnish Literature Society, Helsinki.
- Peyroteo Stjerna, R. 2016. *On Death in the Mesolithic: Or the Mortuary Practices of the Last Hunter-Gatherers of the South-Western Iberian Peninsula, 7th–6th Millennium BCE*. PhD thesis. Uppsala University.
- Pizzorno, A. 2010. The mask: an essay. *International Political Anthropology*, 3 (1), 5–28.
- Polyakov, I.S. 1882. Issledovaniya po kamennomu veku v Olonetskoj gubernii, v doline Oki i na verkhovyakh Volgi. *Zapiski imperatorskogo Russkogo Geograficheskogo Obschestva, Otdeleniye etnografii*, IX. Royal Russian Geographical Society, Saint-Petersburg, 1–164.
- Porr, M. & Alt, K.W. 2016. The burial of Bad Dürrenberg, Central Germany: osteopathology and osteoarchaeology of a Late Mesolithic shaman's grave. *International Journal of Osteoarchaeology*, 16, 395–406.
- Rasmussen, S. & Allentoft, M. E., Nielsen, K., Orlando, L., Sikora, M., Sjögren, K.-G., Gorm Pedersen, A., Schubert, M., Van Dam, A., Moliin, C., Kapel, O., Bjørn Nielsen, H., Brunak, S., Avetisyan, P., Epimakhov, A., Khalyapin, M.V., Gnuni, A., Kriiska, A., Lasak, I., Metspalu, M., Moiseyev, V., Gromov, A., Pokutta, D., Saag, L., Varul, L., Yepiskoposyan, L., Sichert-Pontén, T., Foley, R.A., Mirazón Lahr, M., Nielsen, R., Kristiansen, K. & Willerslev, E. 2015. Early divergent strains of yersinia pestis in Eurasia 5000 Years Ago. *Cell*, 163 (3), 571–582.
- Smirnov, V.I. 1940. *Otshot ekspeditsii Arkhangel'skogo museya v 1940 godu*. Field report at Scientific Archive of Arkhangel'sk Museum of Local Lore.
- Sørensen, S.A. 2016. Loose human bones from the Danish Mesolithic. In *Mesolithic Burials – Rites, Symbols and Social Organisation of Early Post-glacial Communities*. Eds. J.M. Grünberg, B. Gramsch, L. Larsson, J. Orschiedt and H. Meller. Handesmuseum für Vorgeschichte, Halle (Saale), 63–72.
- Strassburg, J. 2000. *Shamanistic Shadows: One Hundred Generations of Undead Subversion in Southern Scandinavia 7000–4000 BC*. Stockholm Studies in Archaeology, 20. Stockholm University, Stockholm.
- Tarasov, A., Nordqvist, K., Mökkönen, T. & Khorošun, T. 2017. Radiocarbon chronology of the Neolithic-Eneolithic period in the Karelian Republic (Russia). *Documenta Praehistorica*, XLIV, 98–121.
- Tarlow, S. & Nilsson Stutz, L. 2013. Beautiful things and bones of desire: emerging issues in the archaeology of death and burial. In *The Oxford Handbook of Death and Burial*. Eds. S. Tarlow & L. Nilsson Stutz. Oxford University Press, Oxford, 1–16.
- Törv, M. 2016. *Persistent Practices. Multi-Disciplinary Study of Hunter-Gatherer Mortuary Remains from c. 6500–2600 cal. BC, Estonia*. Dissertationes Archaeologiae Universitatis Tartuensis, 5. University of Tartu Press, Tartu.
- Trinkaus, E., Lacy, S.A. & Willman, J.C. 2016. Human burials and biology. In *Dolní Věstonice II Chronostratigraphy, Paleoethnology, Paleoanthropology*. Ed. J. Svoboda. The Dolní Věstonice Studies, 21. Academy of Sciences of the Czech Republic, Brno, 328–344.
- Trinkaus, E. & Buzhilova, A.P. 2018. Diversity and differential disposal of the dead at Sunghir. *Antiquity*, 92 (361), 7–21.
- Utkin, A.V. & Kostyleva, E.L. 2001. Pogrebeniya na stoyanke Karavaikha. *Rossiyskaya Arkheologiya*, 3, 55–66.
- van Gennep, A. 1960 [1909]. *The Rites of Passage*. Chicago University Press, Chicago.
- Vargha, M. 2017. Deviant burials in rural environment in the High Middle Ages – ritual, the lack of ritual, or just another kind of it? In *Religion, Cults & Rituals in the Medieval Rural Environment*. Eds. C. Bis-Worch & C. Theune. Ruralia, XI. Sidestone Press, Leiden, 271–280.
- Waronen, M. 1898. *Vainajainpalvelus muinaisilla suomalaisilla*. Suomalaisen kirjallisuuden seuran kirjapainon osakeyhtiö, Helsinki.
- Wiedemann, F.J. 1878. *Auben dem Innern un äussern Leben der Ehsten*. Oberlehrer Fr. von Keussler, Saint-Petersburg.
- Vikkula, A. 1987. The Stone Age graves of Nästärri site in Laitila, SW Finland. *Suomen Museo*, 93, 5–17.
- Zagorska, I. 2001. Amber graves of Zvejnieki burial ground. In *Baltic Amber. Proceedings of the International Interdisciplinary Conference Baltic Amber in Natural Sciences, Archaeology and Applied Arts 13–18 September*. Vilnius, Palanga, Nida. Ed. A. Butrimas. Acta Academiae Artium Vilnensis, 21, 109–124.
- Zagorskis, F. 1961. Kreiču neolita kapulauks. *Arheologija un etnografija*, 3, 3–18.
- Zagorskis, F. 2004 [1987]. *Zvejnieki (Northern Latvia) Stone Age Cemetery*. Translated by V. Bērziņš. BAR International Series, 1292. Archaeopress, Oxford.
- Zvelebil, M. 2003. Enculturation of Mesolithic landscapes. In *Mesolithic on the Move. Papers Presented at the Sixth International Conference on the Mesolithic in Europe, Stockholm 2000*. Eds. L. Larsson, H. Kindgren, K. Knutsson, D. Loeffler & A. Åkerlund. Oxbow books, Oxford, 65–73.

## NOTES

- 1 The current location of the Kubenino human remains is unknown, and thus we must rely solely on the observations and documentation made by Foss. Indeed, according to the documentation of the burials, the skulls of all the individuals seem to have been badly damaged. However, without further analysis it is impossible to tell whether this was due to a deliberate act of skull fragmentation or a natural taphonomic process.
- 2 Due to the limitations of the studied material, information on the Kreiči burials is scarce. However, since these burials represent Stone Age hunter-gatherer prone burials from our region of interest, we nevertheless decided to include them in the study.
- 3 Differing from the modern western view, many hunter-gatherer populations believe that humans and animals have several souls, of which one was located in the facial area of the individual (Harva 1933, 175–175).



# **ANALOGY AND ARCHAEOLOGICAL PROCESS: CREATING PLACES IN THE SCANDINAVIAN DIASPORA OF THE VIKING-LATE NORSE PERIOD C. AD 800–1200**

**JANE HARRISON**

Archaeologists use analogy. As a consequence, we need to be explicit about the ways in which analogy informs interpretation, from ethnographic analogy to the constructive comparison of contemporary sites. This paper focuses on specific social practices captured in archaeological investigation and discusses how analogy can be used to reveal the cultural motivation and impact behind a range of comparable human behaviours.

Scandinavians who settled across the North Atlantic in the Viking Age needed to establish new 'home' landscapes in the areas they colonised. In this paper, new research is used to explore ways in which settlers set out to make landscapes work for them metaphysically as well as to support their survival, applying analogy to understanding the social processes involved in constructing culturally sustaining settlement surroundings.

The case studies will come from the Orkney Islands of Britain, using new and re-analysed archaeological examples. This evidence will be used to construct analogies between the use of midden material in building important Viking-Late Norse period longhouse complexes, the deliberate placing of special deposits at moments of change in the life-cycles of those structures, and the deposition of hoards in the wider landscape. The paper will suggest that analogous social practices embedded in those behaviours illuminate the way people expressed and experienced important ideas through their physical environment.

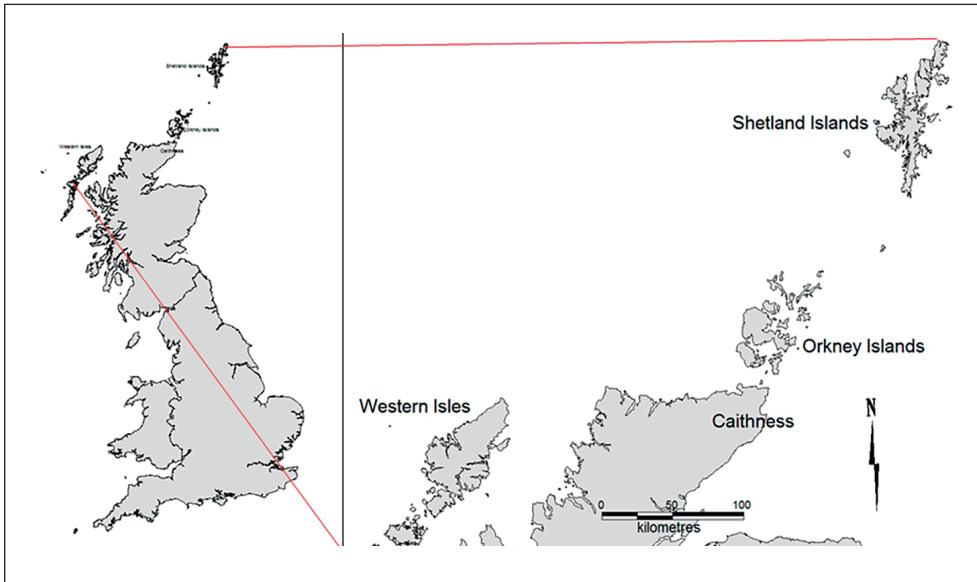
*Keywords:* Viking Age, Orkney, settlement, placed deposits, process, midden material

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## **INTRODUCTION**

The first steps in archaeological investigation usually involve the careful and thoughtful discovery and recording of material culture, complementing and feeding into wider in-

vestigations of the places where people lived and worked. However, to exploit fully the data collected we need to reach for understandings of the motivations behind the acquisition, creation and use of material culture. We work towards interpretations that bring



**Figure 1.** Map showing the location of the Orkney Islands. *Map by Jane Harrison.*

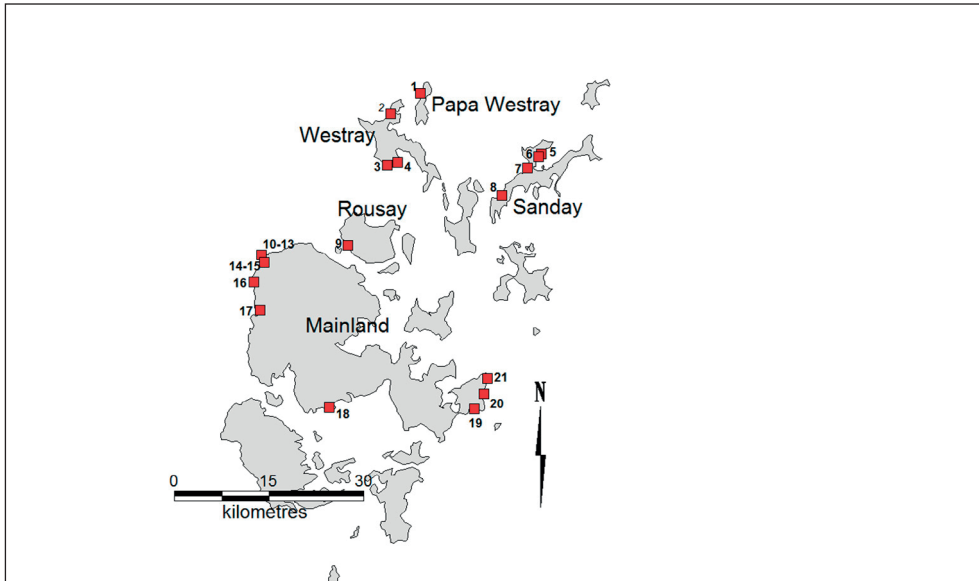
together the data in coherent and compelling constructs, bringing us closer to illuminating how people lived in the past and even why they lived in those particular ways. Analogy can help archaeologists with this: it is one of our tools for thinking. We employ it to raise interesting ideas and questions, to extend interpretation and so to make the best possible use of challenging and partial data. However, we are sometimes less than explicit in acknowledging the weight of its interpretative impact. This paper concentrates on thinking about excavations in their landscape context to probe the use of analogy in archaeology.

Analogy is a way of building bridges from better understood areas to things we understand less well (see especially papers in this volume; Burrell 1972; Wylie 1985). Sometimes the use of analogy is really as straightforward as a constructive comparison between contemporary sites with sufficient elements of

resemblance and adequate contextual similarity. If they are alike in some respects then – by analogy – they may be alike in others. Here context is crucial, with the process of reasoning from parallel cases strengthened by correspondence of context. Put simply, we might reason that if one hillfort site in a particular region had certain attributes then a less thoroughly investigated hillfort nearby with some of those same attributes could also be similar in other ways. The analogy might guide further investigation and, in harnessing a more robust evidence base, provoke more wide-ranging interpretation.

This paper asks whether there are also more nuanced ways of inferring by analogy in ways which are informed by particular aspects of the material world we are striving to understand, and especially by the things people *did* in shaping and constructing sites and landscapes to make them conform to and





**Figure 2.** Map showing the locations of all excavated and certain Viking-Late Norse sites. Number 17 locates the Snusgar and East Mound: referred to together as the Bay of Skail sites. *Map by Jane Harrison.*

reflect their communities' social framework. It attempts to move beyond static material culture to those active practices, to the ways of doing things that made places into homes (Ingold 1995). Such social practices are windows into the thought processes of the people who carried them out. Thus, the focus here is on analogies of process and effect, on analogous behaviours and their cultural impacts. The case studies are drawn from the distinctive settlement landscape that Scandinavian groups established on moving to Orkney (Barrett 2011, 413–415; Graham-Campbell & Batey 1998; Harrison 2016, 24–29, 380–399). Within that framework, analogies will be drawn between the treatment of hoards in the landscape, the ritualised or deliberate concealment of objects placed in and around

important longhouses, and the use of midden material in the same domestic environment.

### THE CONTEXT: THE BAY OF SKAILL AND LONGHOUSE SITES ON MOUNDS

The case study site is situated in the Bay of Skail on West Mainland in the Orkney Islands (Figs. 1 & 2), where two stone-built Viking-Late Norse period longhouse complexes were excavated as part of the Birsay-Skail Landscape Archaeology Project (Harrison 2016, 71–86; Harrison 2019).<sup>1</sup> The Bay of Skail is a classic example of the type of settlement area most favoured by Scandinavian arrivals into Pictish Orkney in the ninth and tenth centuries: a sandy bay with



**Figure 3.** The Bay of Skaill, West Mainland, Orkney: looking north-east. *Photo by Jane Harrison.*

good beaching for boats, fresh water, and easy access to both arable and pastoral land (Fig. 3; Harrison 2016, 47–90). All of the identified Viking-Late Norse settlements in Orkney on such bays or coastal stretches were almost without exception located on sandy and coastal mounds or ridges (Fig. 2 shows the excavated examples). These places were carefully selected for their visual prominence although the mounds themselves are rarely dramatic, often rising only a few metres above their surroundings, they are so situated as to dominate the landscape. The buildings clustered on the mound-top together formed a longhouse-complex and would always include a longhouse, often with barn, workshop or cooking-place annexes or extensions, and almost certainly also out-buildings and yards (excavations have not always been sufficiently extensive to be certain), with a domestic hall-space at the heart of the longhouse. This hall-

space was where people worked, slept, met and ate. All the structures were sub-rectangular, in clear contrast to the predominantly circular buildings that had characterised the preceding Pictish period in Orkney. The long-houses were furnished with a characteristic and new range of artefacts.

The sites were also closely associated with skaill place-names (ON *skáli* 'hall'), a name that both reflected their function and evoked the social importance of the halls (Lamb 1997). By the tenth century, the islands were ruled by the earls of Orkney. At times the ruling earl would be travelling away from the archipelago, or based on the Scottish mainland at Caithness, or two or three powerful men of the same family would divide rule of the islands between them (Thomson 2008a). The earls were also peripatetic rulers as was usual in that period. As a result the grip of Earldom power on the islands' residents varied in in-



**Figure 4.** East Mound on the right and Snusgar mound on the left, under excavation on the Bay of Skaill in 2006: looking north-west. *Photo by Jane Harrison.*

tensity and much of the time the most influential leaders were probably those one rung down from the earls. The network of skaill/hall mound-sites were the home bases of those leading people where the surrounding community met to discuss matters of shared concern as well as the assembly places for those local groups to meet with the roaming earls of Orkney or their representatives. The mound settlements were therefore key local central places and it would be reasonable to expect some of what happened in the buildings to reflect that status as well as their more formally ceremonial role.

Figure 4 shows the two settlement mounds on the Bay of Skaill under excavation. Both of the mounds are geologically composed of windblown sand, located only a few hundred metres from the beach and skirted by fresh-water burns. On the flat summits of both were discovered examples of that prin-

cipal settlement type in Viking-Late Norse Orkney – the longhouse complex (Harrison 2019 and forthcoming). It was suggested above that such longhouses, with their focal hall-space, provided social and organisational central places for Viking-Norse Orcadian society. The crucial role of the hall more generally in Scandinavian/Viking diaspora society has been much discussed: it was the location of everyday activity as the domestic heart of a settlement but also a place for feasting, for assembly and for the associated ceremonial and ritual (e.g. Carstens 2016; Herschend 1993). Thus it is perhaps unsurprising that the author's recent research demonstrated that the settlers deliberately located these community-defining buildings in Orkney in highly-visible locations (Harrison 2016, 358–379). Over time, the original stone-built hall-space and any associated structures were also changed and developed. However, in the manner of

terpen and tells, the architectural alteration did not feature settlement shift across the relatively open landscape, despite there being plenty of space for physical expansion. Rather, it was contained within a tight area around the hall-space and new buildings were constructed over old. In the process the bulk and visibility of the mound and its buildings were also increased.

The frequent structural changes made to the longhouse complexes ranged from radical rebuilds, including the shortening or extending and the addition of annexes to the hall-space and longhouse, to major alterations of surrounding workshops, storehouses and yards. If the dating for the Bay of Skail sites reflects what happened at all of the similar if less well-dated longhouse sites in Orkney of this period, such major programmes of changes may have been undertaken as often as every 20–30 years (Hamilton et al. 2019). At all the excavated longhouse sites on Orkney available for re-analysis by the author, the building changes also incorporated elements of existing structures, reflected and were constrained by retained sections of older layouts, and remained within a tightly defined area focused on the central, domestic hall-space (Harrison 2016). The open space of the main hall remained the pivot, and that element of the longhouse complex was never re-aligned even if extensions or annexes were added. Every iteration of a hall-building contained within it the social heart of the previous version. For the other buildings, new arrangements might hide much of the older version, but also invariably carried elements of the previous structure through into the next phase of the site's life. Thus, around a stable centre, the mound-sites became long-lived, re-used

brown field locations. The centrality of the hall-space emphasised the importance to the community of the social activity it witnessed.

It is apparent from this that the construction and reconstruction of the settlement mounds played a central role in the process of inhabiting, organising and making the landscape familiar. The significance of placed deposition within these settlement landscapes will now be considered, aiming to expose more of the cultural forces that directed that process.

## **PLACED DEPOSITS**

In the context of colonial enterprise and the creation of new communities in new places, shared and repeated practices or activities would be a vital part of re-constructing and sustaining group affiliation. Therefore, when a ship-load of people originating in Scandinavia landed in Orkney, their sense of belonging was in part defined through their subsequent involvement in active, repeated practices utilising a range of material culture. The activities involved might include fishing, cooking, working the land, making clothes, tools and weapons, and more overtly ceremonial feasting, negotiating and gift-giving occasions. These actions produced 'communities of practice': common cultural codes that were created through physical processes and activities linked to and linking objects, materials and landscapes. The settlers were thus over time creating new 'home' landscapes in the area surrounding their farms as they worked on it, travelled across it and brought things and people into the home. In so doing, they intertwined and linked their lives with the physical landscape (Ingold 1995).

The key behaviour in that process of constructing 'home' landscapes and examined here is the deliberate placement in carefully selected locations of chosen objects and organic material, both in and around buildings on the settlement mounds, and more widely on and into the mounds themselves. Analogues will be established between the hoarding of precious artefacts, where depositional behaviour has been more widely researched for this period and is considered to be better understood, and other types of placed deposits that are less well comprehended but likely to have been produced in analogous processes. If the *processes* were analogous then perhaps the cultural concepts that motivated people to carry them out were also similar. The emphasis here is on similarity of action, on the kinetic, and on the possible impact of the entire undertaking, not only the final result (Ingold 2000).

Longhouses built around hall-spaces on visually-dominant mounds were characteristic of Viking-Late Norse period Orcadian settlement landscapes. So too were a range of placed deposits in the three following categories: hoards buried in the landscape; individual objects and assemblages of objects placed around and within the mound buildings, and also the re-disposition of curated organic midden material within and around the same structures. All the more traditional if relatively rare Viking-Late Norse period hoards of precious metals and artefacts found in Orkney (see below) and the placed deposits of more domestic objects recorded in the author's recent research and used in this paper, share the following characteristics: the object, or assemblage of objects/materials, has clearly been selected and arranged (and so stand

out from other material found in the context in which they were placed); the location has also been deliberately chosen; the deposits have been made at a significant moment in time, and the objects were never retrieved (Harrison 2016, 84–85; and see Bradley 2017; Hamerow 2006 & Sofield 2012 and 2017 for discussions of these characteristics in different contexts).

Apart from the Bay of Skail case study used here, the author's wider research on examples of placed deposits in settlement contexts in Orkney has up to now relied on published and/or unpublished excavation reports and archived reports. The similar deposits at other sites of more ordinary artefacts that have already been identified were recognised despite the fact that the excavators of the majority of longhouse sites in Orkney were not looking for them in the domestic environment. However, it is likely that more will be discovered in work underway on the more detailed site archives. The rest of this paper will now explore the analogy between hoards and other placed deposits, using the Bay of Skail sites.

## HOARDS

Hoards are distinguished from the placed deposition under discussion here as being assemblages dominated by precious metals, coins, hack-silver/gold and jewellery. These have been interpreted as collections either buried for safe-keeping and later retrieval or deposited for ritual reasons. To date only five hoards of precious metal – comprising some combination of ingots, hack-silver, coins and ornaments – have been discovered in Orkney (Graham-Campbell & Batey 1998, 228–246). The relatively small number suggests this ver-



sion of placed deposition either was considered as having less impact in the Orcadian social context or that the means for making such extravagant gestures were not available.

The largest Viking-Late Norse period hoard discovered in Orkney – one of only three known substantial hoards on the islands – was found in the nineteenth century on the Bay of Skail, and is known as the Skail hoard (Graham-Campbell & Batey 1998, 228–230; Graham-Campbell 2019). Indeed, until the recent excavations on the Viking-Late Norse settlement mounds, the archaeological appeal of the Bay of Skail rested on the Neolithic settlement of Skara Brae and the Skail hoard. The hoard is one of the largest Viking silver hoards discovered in Scotland, and the only one in Orkney dated to the tenth century. It includes high-status objects such as silver penannular brooches, and more mundane but still precious metal ‘ring-money’ and hack silver. It was discovered in 1858, most likely on the east-facing slopes of the more western of two Viking-Late Norse settlement mounds on the northern side of the Bay of Skail, known as the Mound of Snusgar (Fig. 4; Harrison 2019). The hoard’s contents argue for a date of deposition in around AD 960–980 (Graham-Campbell 2019), at a time when the both the longhouse complexes on the recently-excavated Bay of Skail settlement mounds – the Mound of Snusgar and East Mound about 100 metres to the east-south-east – were occupied. Although the objects were not located among the buildings excavated on the Mound of Snusgar – the exact circumstances of the hoard’s recovery are obscure – it is probable that the Skail hoard was deposited relatively close to the longhouse complex located on the flat summit of that mound, perhaps within an

enclosure or small field associated with the buildings. The trench excavated in 2005–2006 and shown in Figure 4 running down the south-eastern slope of the Mound of Snusgar, revealed that the upper half of that part of the mound was entirely shaped by middens and working areas linked to the settlement. The burial spot of the hoard was certainly not distant from habitation.

In Orkney the period during which the hoard was hidden was conflict-riven, even by the fractious standards of the Earls of Orkney (Thomson 2008a, ch. 4), and this accumulation of wealth may well have been one secreted for later retrieval (Graham-Campbell & Batey 1998, 245–247; and see the St Ninian’s hoard for a hoard interpreted as having been buried for safe-keeping: Barrowman 2011). However, there is strong evidence from northern Europe in periods from prehistory through to the medieval for such hoarding having been carried out for sacred purposes (Bradley 2017 and references; Lund 2005; 2008; Naylor & Bland 2015; Raffield 2014). The assemblages in those cases had not been deposited for subsequent retrieval. For example, hoards buried in Scandinavia in the pagan Viking period were often committed to watery or boggy resting-places and clearly not intended for recovery. Perhaps in the case of the Skail hoard, the fact that people continued living on the mound for some considerable time – into the twelfth century – after the hoard was deposited may strengthen the case for that hoard’s possible ritual character. There was no break in the occupation of the Snusgar longhouse around or after the period of deposition and although a number of people may have known of its location close to the building the hoard remained untouched. Rather than con-

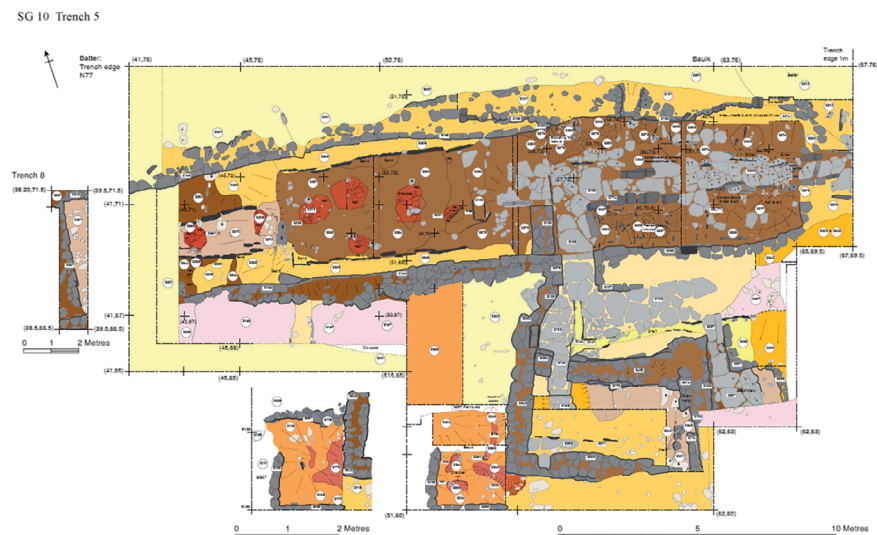
cealed for retrieval, that hoard too may have been put out of circulation.

There is not space in this paper for a lengthy discussion of the literature relating to, and interpretations of, hoards of high-status objects and precious metals in the landscape (see references in Bradley 2017 and Hedeager 2011), but it is important to emphasise some of their characteristics to inform the analogy being drawn here with other forms of placed deposit. Broadly, as suggested above it has been argued that while some were being hidden for temporary safe-keeping, others were clearly being intentionally deposited in their final resting-places. The latter category of hoard has been interpreted as playing an active part of the process of fashioning a culturally-resonant landscape, often interred, probably at a formal occasion, in places of transition, change or crossing (Lund 2005; 2008; Bradley 2017, 180–198). Such places might include bridges, fords, and locations where there is a change in hydrology, topography or geology. Lotte Hedeager (2011, 152–163) contended that in areas like that around Gudme (Funen) in Denmark, this alienation of cultural capital contributed to creating cosmological landscapes. The character and associations of the objects involved was also argued to strengthen the social and spiritual power of the deposition. Presumably, the committal was part of a public ceremony and together the composition of the hoards, the timing of the burials and their location generated potent, culturally-charged reference points in the landscape, associated with power, with cult and with transformation.

## **PLACED DEPOSITS IN LONGHOUSE COMPLEXES ON THE BAY OF SKALL**

There is a long history in other regions and at other times of the placed deposition around settlement areas of domestic objects and animal parts. Indeed such placed deposition often dominates the archaeological record for such practices from Bronze Age southern Britain and the northern European Iron Age to early modern northern Finland (Paulsson-Holmberg 1997; Brück 1999; Herva & Ylimaunu 2009) – but not apparently in Viking-Late Norse Orkney. There is also a significant record of the deliberate placing of clearly high-status, exotic objects *within* buildings. The latter practice is noted outside the Orkney Islands, and overall for a chronologically slightly earlier period, but from areas in Scandinavia, that may have been the homelands of many of the settlers. In this category are the tiny figurative gold foils placed in post-holes at Borg (Lofoten) in Norway in the early Viking Age and at Gudme in Denmark, as well as the exotic metal beaker buried near the hearth within the probable cult building in Uppåkra in the tenth century (Sweden) (Nielsen et al. 1994; Munch et al. 2003; Larsson 2005). The cult building at Uppåkra was rebuilt several times in the same location, foreshadowing the later practice in Orkney. The gold foils must have been placed in post-holes either before posts were raised or after they had been taken down. These cases were clearly ritualised depositions, linked to power and ceremonial and also, at least in some cases, to changes in the arrangements of singular buildings and moments of transition.

In Anglo-Saxon England placed deposits comprising domestic artefacts are not uncom-



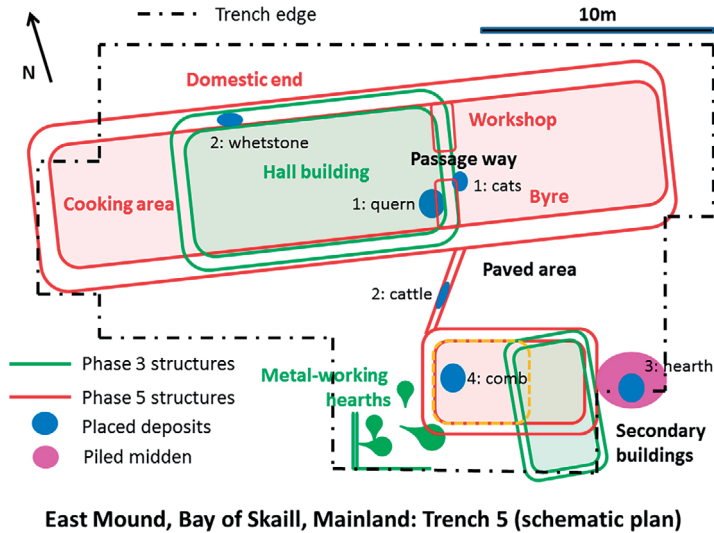
**Figure 5.** Plan of the East Mound longhouse. *Drawing: Birsay Skaill Landscape Archaeology Project, University of Oxford.*

mon but were rarely made within buildings (Hamerow 2006). Ritualised deposits of more mundane items – including pottery and animal bones – have been discovered in ditches, enclosure entrances and sunken featured buildings, but not usually in the principal domestic buildings – only a very small number of placed deposits have been discovered in association with Anglo-Saxon halls (Hamerow 2006; Morris & Jervis 2011; Sofield 2017). In Orkney in the eleventh to twelfth centuries, there are no recorded placed deposits of precious items – or indeed until this point of objects or assemblages of any kind – in Viking-Late Norse period buildings in Orkney. However, aside from the more familiar and relatively rare hoards of precious metal discussed above, two categories of placed deposition have now been identified within Orcadian Viking-Late Norse period longhouse complexes: deposits of more

mundane objects made within and around the buildings, and the selective and purposeful use of redeposited midden material. Those categories differ in two interesting respects from hoards more generally and the hiding of precious items in important buildings. Firstly, the longhouse buildings themselves, while the most significant in their local area, were not necessarily amongst the very highest-status in Orkney, and secondly, the objects and materials involved are notable, as in the earlier Anglo-Saxon period in England, for being more mundane. Nevertheless, as will be demonstrated, these deposits share sufficient characteristics with hoards in the landscapes and burials of high-status artefacts in buildings, for analogous interpretations to be proposed.

Both mounds excavated on the Bay of Skaill were crowned with large longhouses (Fig. 5). The Mound of Snusgar longhouse





**Figure 6.** Schematic plan of the East Mound settlement showing the location of the placed deposits. *Drawing by Jane Harrison.*

was in use from probably around the later-ninth to the earlier-twelfth century, the East Mound longhouse from the earlier-tenth to the later-twelfth century. The occupation of the longhouses therefore overlapped chronologically, during the eleventh century in particular, but pre-eminence seemed to shift around the mid-eleventh century from the Mound of Snusgar house (which was much less well preserved), to the 26-metre-long longhouse on East Mound (Hamilton et al. 2019). On Snusgar only elements of the longhouse building survived – relatively short stretches of foundations and demolition debris – but what was preserved were the large and complex midden accumulations that shaped the south-eastern side of the mound and appeared to surround the building. Midden material was an unavoidable feature of living on both of the mounds.

The deeply sand-buried East Mound longhouse was extremely well-preserved, and phases of alteration and rebuilding could be recorded, along with associated middens and yards (Harrison 2019). The original hall-space – an open rectangular space with benches – was lengthened with the addition, during the eleventh century, of a westward extension devoted to cooking, and an eastern byre and workshop (Fig. 5). The open hall-space remained in exactly the same place through all the other architectural change, along with the stone-fronted side-benches. A smaller building to the south, perhaps originally also a domestic building and subsequently a workshop or store, was first rebuilt on a different alignment, although utilising stretches of the original walling in places, and then eventually shortened. A number of placed deposits were recorded within and around the buildings on the East

Mound, (Fig. 6; a possible one on Snusgar is omitted from this discussion as its sound identification as a placed deposit was less certain in the more disturbed context of that mound).

On the East Mound, the original hall-building was extended in the earlier-eleventh century. As part of that process, a quarter of a large and unusual, decorated Later Iron Age quernstone was pressed into the eastern end of the hall's floor before the workshop end was built (Fig. 6). The quernstone would have had an interesting biography as an object: originally key to producing food, it was saved presumably after being broken, perhaps because of its decoration as well as associations. It had either been passed down generations, raising interesting questions about the relationship of settlers with the indigenous Picts, or found and kept then reburied by those who finally deposited it. It carried associations with fertility and transformation but also with antiquity and continuity. After deposition the quernstone was partly hidden and thus protected by a new internal cross-wall. It was however clear from its location it had not been simply re-used as part of the wall's foundations. That wall had been erected to create a passageway from the central open, domestic space into the eastern byre/workshop. At the other end of that passageway, another placed deposit was buried. Placed just inside the byre, it comprised two partial but articulated cat corpses, concealed before the setting of a flagged approach to the passageway from the southern entrance to the byre. This placed deposit must have been buried just slightly later than the quern was hidden, but as part of the same building works.

When the northern wall of the hall-building was extended to construct the western

cooking extension, a small and attractive whetstone was built into a new course of the wall. Finally, and probably during this same extended phase of alterations, a number of cattle mandibles were concealed in the core of a double-faced stone wall erected to join the longhouse with the out-building building to the south. Major alterations were also made to the smaller building to the south converting it from a dwelling to an outbuilding. It had been realigned from north-south to east-west and extended directly over both the northern section of the previous building, and a decommissioned metal-working yard. At some point during that process a pit was dug into a midden pile being curated for re-use and located just to the east of the new out-building. Vitrified material from an open hearth (possibly one of the metal-working hearths), stones and articulated elements of cow bodies were piled in the centre of the pit before it was rapidly filled in. Here there is an interesting association of metal-working with cattle, both status symbols, and a suggestion that the incorporation of the hearth debris was marking the ending of metal-working on the site.

The next major phase of alterations occurred into the twelfth century. The heyday of the complex had passed and the principal longhouse building was abandoned as a house, and stripped of its roof to be used as an animal shelter. The out-building to the south was shortened to create a small square storeroom or animal house for continued use, making considerable and obvious use of the existing walls. This rearranged building was then used intermittently by farmers living somewhere else in the vicinity. During the initial alteration work on that out-building the most complex placed deposit made on

East Mound was laid. Several objects were concealed by the previous entrance of the altered out-building, pressed into the ashy floor deposits that had accumulated in the preceding building, and then covered by a slab forming part of the stone floor-paving for the new storeroom/animal house. The assemblage comprised a complete bone comb, an unusual iron candlestick, an articulated part of a dog skeleton, and three sherds of an unusual, although not especially exotic, glazed pottery, most likely originating in northern France. The pottery all came from one jug and other sherds from the broken vessel were found scattered across the interior of the now roofless longhouse building just to the north. The concealing of the objects and the scattering of the pottery was presumably linked to ceremonies and procedures marking the occasion of people leaving the mound settlement as their domestic centre and moving to live elsewhere. Indeed, during the twelfth century, many similar longhouse complexes in Orkney were abandoned with the rise of the town of Kirkwall as a permanent political and cultural centre for the Earldom and the decline of chieftain-style peripatetic government of the islands.

All these interments were as much placed deposits as the more spectacular gold from longhouses in Scandinavia; they all comprised selected objects placed in significant locations to reflect key moments in the life of the settlement. Those moments were all linked to significant architectural change and thus likely to some notable alteration in the leadership or role of the settlement. By analogy with hoards and deposits of precious items made within outstanding buildings, the more mundane objects found in the local longhouse must

have been selected for concealment because they were perceived as having associations that enhanced and reflected the purpose of the occasion. The ritual of making the depositions was intended to help smooth the transitions by deepening and anchoring the cultural significance of the buildings. What might those meaningful associations be? Although they were not high-status or overtly precious, all the selected objects or animals represented by their body parts were very closely linked with the identity of the people of the settlement and the warp and weft of their daily life. References in the sagas suggest that hairstyles may have played a distinctive part in defining a person's individuality; by any measure, hair combs are very personal objects. Highly decorated combs have been interpreted as potent signals of personal identity (Ashby 2009). The deposited comb may have been representative of someone whose life or actions had until that point been central to the life of the settlement. The animal parts selected for deposition were from domesticated beasts, and in the case of cats and dogs from those most intimately associated with people and correlated in legend and myth with human and heroic characteristics (Hedeager 2011, 81–85, 95–98). Other objects were representations of transformations, of productive change: the quern representing the creation of food from grain; whetstones standing for the maintenance of sharp and effective tools and weapons; the candlestick with the chasing away of the dark; the pottery for producing feasting paraphernalia from clay, and the hearth detritus for the magic of working of iron into essential implements, including weaponry. Indeed in the case of the quern and the hearth material these objects not only

represented transformative processes but had been active in those processes. They were not only symbolic of transformation but had agency as transformative objects. In all these cases it seems that the biographies and associations of the artefacts were being harnessed to mark and smooth a transition in the life of the settlement.

Taking the analogy a little further, the deposition of these objects or assemblages may also have taken place during public ceremonies marking rebuilding, major structural alterations or abandonment, and thus transformations in the character and perception of the settlement. The alterations in the longhouses happened at chronological intervals that could be linked to generational change. Leadership change after the death of a key person perhaps provides one of the wider social contexts for the rebuilding and the committal ceremonies. Such moment could be difficult for a community and the referencing of past activity and productivity could help anchor and legitimise new social arrangements.

## **MIDDEN MATERIAL AS A PLACED DEPOSIT**

The analogy between hoards and building deposits is now extended, if more tentatively, to a consideration of the way in which midden material was treated on the settlement mounds. All around the buildings and on the mound, midden material was carefully stored, separated into different types of material, or had obviously been collected and reused (Harrison 2016; Harrison forthcoming). This organic material when re-deposited played a vital role in the construction of the mounds and longhouse complexes, including

being used to stabilise sandy areas, to create flooring, and in the construction of walls. Such midden material included: ash from fires; the detritus of butchery, food preparation, cooking and feasting; craft debris; floor sweepings; old turf from roofs, and the mixed dung and bedding material – such as peat and turf – cleared from the byre. The material thus evoked a great range of activities. Throughout the Bay of Skaill excavations, the composition and location of varieties of midden material were carefully recorded and it was discovered that midden was treated very selectively, and used or stored around the settlement in several ways (Harrison 2019 and forthcoming). Much of the midden material was well-decomposed and rotted down by the time it was re-used – it had to be so to be used effectively – yet just as we the excavators were aware of its variety, the people working with the material must have noticed both the various components and in particular the artefact and bone fragments, and the constant process of transformation that elements in the mix were undergoing.

Three main applications of midden material have been defined (Harrison 2016, 73–74). ‘Structured’ midden was used primarily to stabilise and bulk out the sandy slopes of the mounds and in the process produced level and compacted areas that were suitable for butchery and other activities. In this case, midden material was spread in layers of varying composition, terraced and held in place with low walls. Its composition was dominated by byre-waste and decayed turf, with some detritus from craft and butchery activity. Secondly, different combinations of selected organic material were stored for re-use round the buildings in ‘piled’ middens. Ashy

material collected from fires and hearths, and heaped in such midden piles, was later spread across internal floors and richly organic matter characterised by domestic and cooking waste, and therefore strong and sticky, was used to pack the core of the double-faced stone walls. To have done the job this material must have been especially well-rotted down before it was used. Similar material was also used to fertilise the garden plots and in-fields of the settlement. Already a correspondence can be established between the uses of the midden material and the more obvious placed deposits made into wall-cores, such as the cattle mandibles and the whetstone, and into the pit dug into the midden pile. The selected midden material provided the matrix for the more formal deposition. Finally, in the list of uses of midden material, 'spread' midden material mixed liberally with sand and relatively artefact-free, was laid to create stable, practical working areas and yards in the sandy environment around the buildings.

Thus, like the placed deposits made in and around the longhouses, the midden material was selected and deliberately placed in designated areas. While it clearly physically essential to the changes being made in the arrangement of the settlement, by analogy with the placed deposits, the midden material could also be interpreted as carrying cultural meaning for the people living there. The organic material involved was the product of not only more momentous occasions, like feasts, but also of regular domestic work and other activity indispensable to the success of the settlement. Many of those jobs were carried out across the surrounding landscape and thus the pervasive midden material knitted the buildings with its landscape and a histo-

ry of activity. Those jobs, actions producing 'communities of practice', contributed to the creation of a metaphysical cultural home area surrounding the settlement (Ingold 2000). Two further observations might reinforce the interpretation that the process of depositing midden material helped form meaningful home landscapes. First, in stretches of new walling which also incorporated courses of older walls, the midden material selected to pack the wall-core was strikingly artefact-rich. Here not only were the associations of the midden material matrix being built into the next phase of the structure's life but the more specific associations or biographies of the still-recognisable artefacts were being harnessed. It is apparent from the character of the midden piles excavated around both longhouses on the Bay of Skail that midden material of different character was stored separately so it could be re-used for a range of purposes according to its particular composition (Harrison 2016). The builders appear here to have been deliberately selecting a particular blend of midden material for a particular element of construction. Secondly, in the analogous processes of hoarding and the placed deposition of objects, capturing a spirit of change or transformation seems to have been essential. Midden material was, by its very nature, in constant transformation and thus captured the essence of the purpose of placed deposition.

## CONCLUSION

Widely studied and researched hoards have been characterised as often involving selected objects buried in a significant location, probably in a public ceremony for ritual rea-

sons, and not recovered. That process – the sequence of actions – created a meaningful location in a landscape. Some of the associated meanings evoked power and cult; others emphasised and perhaps psychologically facilitated transformation and change. This was a public practice of placing evocative assemblages in meaningful locations at significant times.

This paper has emphasised the drawing of analogy between process and practices, rather than on analogies between artefacts or structures, focusing on the public practice of placed deposition. Placed deposits of domestic things were made in the locally most significant settlements in Viking-late Norse Orkney. These deposits were made at moments of transition and transformation in the life of such settlements when major re-building and re-organisation of the structures was being undertaken. Such structural changes were most probably driven by significant social shifts in the community of the longhouse. By analogy with hoarding and the burial of exotic items in major centres in Scandinavia, both the practice and the deposited material themselves could be interpreted as carrying cultural meaning. Furthermore, on the longhouse mounds, the redistribution of midden material around the settlement, in its complexity and associations also seems to have taken on characteristics of placed deposition. Important concerns – with identity, animals and the power of transformation and change – were being expressed through active practices that linked objects, material and physical places and that captured the associations of objects and materials and built them into the history of the community. So what was the combined social impact of these practices? The central

focus was on transformation, on creating something new to serve a current purpose out of something that had already been a component in past activity. All the transformative processes and objects involved were part of creating and recreating cultural landscapes – home landscapes for settler communities and their descendants. In Orkney, placed deposits were distinctive for their emphasis on domestic activities and objects: this variant of placed deposition established the settlement mounds – mounds of the living – and their constituent activities as the defining central monuments in the landscape.

## BIBLIOGRAPHY

- Ashby, S.P. 2009. Combs, Contact and Chronology: Reconsidering Hair Combs in Early-Historic and Viking-Age Atlantic Scotland. *Medieval Archaeology*, 53(1), 1–33.
- Bäcklund, J. 2001. War or Peace? The relations between the Picts and Norse in Orkney. *Northern Studies* 36, 33–47.
- Ballin Smith, B. (ed.) 1994. *Howe: Four Millennia of Orkney Prehistory Excavations 1978–1982*. Society of Antiquaries of Scotland, Edinburgh.
- Barrett, J.H. 2011. The Norse in Scotland. In *The Viking World*. Eds S. Brink & N. Price. Routledge, London, 411–427.
- Barrett, J.H., Buekens, R.P., Simpson, I., Ashmore, P. Poaps, S. & Huntley J. 2000. What Was the Viking Age and When did it Happen? A View from Orkney. *Norwegian Archaeological Review*, 33(1), 1–39.
- Barrowman, R. 2011. *The Chapel and Burial Ground on St Ninian's Isle, Shetland: Excavations Past and Present*. Society for Medieval Archaeology Monographs 32, Routledge, Abingdon.
- Batey, C., Jesch, J. & Morris, C.D. (eds) 1993. *The Viking Age in Caithness, Orkney and the North Atlantic*. Edinburgh University Press, Edinburgh.
- Bradley, R. 2017. *A Geography of Offerings*. Oxbow Books, Oxford.
- Burrell, D.B. 1972. *Analogy and Philosophical Language*. Wipf and Stock, Oregon.
- Carstens, L. 2015. Powerful Space. The Iron-Age hall and its development during the Viking Age. In *Viking Worlds: Thing, Spaces and Movement*. Eds M.H. Eriksen, U. Pedersen, B. Rundberget, I. Axelsen & H. Lund Berg. Oxbow Books, Oxford, 12–27.



- Downes, J. & Ritchie, A. (eds) 2003. *Sea Change: Orkney and Northern Europe in the later Iron Age*. Balgavies, Angus.
- Garrow, D. 2012. Odd deposits and average practice. A critical history of the concept of structured deposition. *Archaeological Dialogues*, 19(2), 85–115.
- Graham-Campbell, J. 2019. The 1858 Skaili Viking-Age Silver Hoard. In *Beside the Ocean: Coastal Landscapes at the Bay of Skaili, Marwick and Birsay Bay, Orkney*. *Archaeological Research 2003–2018*. Eds D. Griffiths & J. Harrison. Oxbow Books, Oxford, 293–299.
- Graham-Campbell, J. & Batey, C.E. 1998. *Vikings in Scotland. An Archaeological Survey*. Edinburgh University Press, Edinburgh.
- Griffiths, D. & Harrison, J. 2019. *Beside the Ocean. Coastal Landscapes. Viking and Late Norse Settlement at the Bay of Skaili, Marwick and Birsay Bay, Orkney*. *Archaeological Research, 2003–2018*. Oxbow, Oxford.
- Hamerow, H. 2006. 'Special Deposits' in Anglo-Saxon Settlements. *Medieval Archaeology*, 50(1), 1–30.
- Hamilton, D., Krus, A.M., Schwenninger, J.-L., Harrison, J. & Griffiths, D. 2019. Dating and Chronology. In *Beside the Ocean: Coastal Landscapes at the Bay of Skaili, Marwick and Birsay Bay, Orkney*. *Archaeological Research 2003–2018*. Eds D. Griffiths & J. Harrison. Oxbow Books, Oxford, 100–114.
- Harrison, J. 2013a. Building Mounds. Longhouses, Coastal Mounds and Cultural Connections: Norway and the Northern Isles, c. AD 800–1200. *Medieval Archaeology*, 57(1), 35–60.
- Harrison, J. 2013b. Settlement Landscapes in the North Atlantic: The Northern Isles in Context, ca. 800–1150 AD. *Journal of the North Atlantic*, 4, 129–147.
- Harrison, J. 2013c. Mounds, Middens and Social Landscapes: Viking-Norse Settlement of the North Atlantic. In *Northscapes: History, Technology and the Making of Northern Environments*. Eds D. Jørgensen & S. Sörlin. UBC Press, Vancouver, 85–109.
- Harrison, J. 2016. *Building Mounds: Viking-Late Norse Settlement in the North Atlantic c. AD 800–1200*. Unpublished DPhil. thesis. University of Oxford.
- Harrison, J. 2019. The Excavations. In *Beside the Ocean: Coastal Landscapes at the Bay of Skaili, Marwick and Birsay Bay, Orkney*. *Archaeological Research 2003–2018*. Eds D. Griffiths & J. Harrison. Oxbow Books, Oxford, 53–99.
- Harrison, J. forthcoming. *Building Mounds: Settlement, Identity, and Landscape in the Viking-Late Norse Colonies of the North Atlantic*. Routledge, London.
- Hedeager, L. 2011. *Iron Age Myth and Materiality: An Archaeology of Scandinavia AD 400–1000*. Routledge, London.
- Herschend, F. 1993. The Origin of the Hall in Southern Scandinavia. *Tor*, 25, 175–199.
- Herva, V.-P. & Ylimaunu, T. 2009. Folk beliefs, special deposits, and engagement with the environment in early modern northern Finland. *Journal of Archaeological Anthropology* 28(2), 234–243.
- Hunter, J.R., Bond, J.M. & Smith, A.N. (eds) 2007. *Investigations in Sanday, Orkney. Vol. 1: excavations at Pool Sanday, a multi-period settlement from Neolithic to Late Norse Times*. The Orcadian Ltd, Kirkwall.
- Ingold, T. 1995. Building, dwelling, living: how animals and people make themselves at home in the world. In *Shifting Contexts: Transformations in Anthropological Knowledge*. Ed. M. Strathern, Routledge, London, 57–80.
- Ingold, T. 2000. *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. Routledge, London.
- Jesch, J. 2015. *The Viking Diaspora*. Routledge, London.
- Larsson, L. 2005. *Continuity for Centuries: A Ceremonial Building and Its Context at Uppakra, Southern Sweden*. *Acta Archaeologica Lundensia* 48.
- Lamb, R. 1997. Historical Background to the Norse Settlement. In *Settlements at Skaili, Deerness. Excavations by Peter Gelling of the Prehistoric, Pictish, Viking and Later Periods, 1963–1981*. Ed. S. Buteux, BAR publishing, Oxford, 13–16.
- Lund, J. 2005. Threshold sand passages: the meanings of bridges and crossings in the Viking Age and Early Middle Ages. *Viking and Medieval Scandinavia*, 1, 109–135.
- Lund, J. 2008. Banks, borders and bodies of water in a Viking Age mentality. *Journal of Wetland Archaeology*, 8, 53–72.
- McOmish, D. 1996. East Chisenbury: ritual and rubbish at the British Bronze Age-Iron Age transition. *Antiquity*, 70, 68–76.
- Mainland, I., Ewens, V. & Webster, C. 2019. Archaeozoological evidence: the faunal assemblages. In *Beside the Ocean: Coastal Landscapes at the Bay of Skaili, Marwick and Birsay Bay, Orkney*. *Archaeological Research 2003–2018*. Eds D. Griffiths & J. Harrison. Oxbow Books, Oxford, 175–199.
- Morris, C.D. 1989. *The Birsay Bay Project: coastal sites beside the Brough Road, Birsay, Orkney: excavations 1976–1982, Volume 1*. University of Durham, Durham.
- Morris, J. & B. Jervis 2011. What's So Special? A Reinterpretation of Anglo-Saxon 'Special Deposits'. *Medieval Archaeology*, 55(1), 66–81.
- Munch, G.S., Johansen, O.S. & Roesdahl, E. 2003. *Borg in Lofoten: A Chieftain's Farm in North Norway*. Tapir Academic Press, Trondheim.
- Naylor, J. & Bland, R. (eds) 2015. *Hoarding and the Deposition of Metalwork from the Bronze Age to the 20th Century*. BAR British series 615. British Archaeological Reports, Oxford.
- Nielsen, P.O., Randsborg, K. & Thrane, H. (eds) 1994. *The Archaeology of Gudme and Lundeberg*. Akademisk Forlag, Copenhagen.
- Owen, O. 2005. History, archaeology and Orkneying saga: the case of Tuquoy. In *The World of Or-*



- kneyinga Saga: 'The Broad-Cloth Viking Trip*. Ed. O. Owen. The Orcadian Ltd, Kirkwall, 192–212.
- Poulsen, B. & Søren Sindbæk, M.** (eds) 2011. *Settlement and Lordship in Early Medieval Scandinavia*. Brepols, Turnhout.
- Raffield, B.** 2014. 'A River of Knives and Swords': ritually deposited weapons in English watercourses and wetlands during the Viking Age. *European Journal of Archaeology*, 17, 634–655.
- Ritchie, A.** 1977. Excavations of Pictish and Viking-age farmsteads at Buckquoy, Orkney. *Proceedings of the Society of Antiquaries Scotland*, 108, 174–227.
- Roesdahl, E.** 2009. Housing Culture: Scandinavian Perspectives. In *Reflections: 50 Years of Medieval Archaeology*. Eds R. Gilchrist & A. Reynolds. Maney Publishing, Leeds, 271–288.
- Sofield, C.** 2012. *Placed Deposits in Early and Middle Anglo-Saxon Rural Settlements*. Unpublished DPhil. Thesis. (Manuscript at the University of Oxford).
- Sofield, C.** 2017. Thresholds in the lives of settlements: Anglo-Saxon placed deposits made at entrances and liminal times. In *Life on the Edge: Social, Political and Religious Frontiers in Early Modern Europe*. Eds S. Semple, O. Orsini & S. Mui. Neue Studien Sachsenforschung 6. Braunschweigisches Landesmuseum, Braunschweig, 195–208.
- Thomson, W.** 2008a. *The New History of Orkney*. Third edition. Birlinn, Edinburgh.
- Thomson, W.** 2008b. *Orkney: Land and People*. The Orcadian Ltd, Kirkwall.
- Wylie, A.** 1985. The Reaction against Analogy. *Advances in Archaeological Method and Theory*, 8, 63–111.

## NOTE

- 1 Viking-Late Norse is preferred as a designation for the period ca. AD 850–1150 as embracing both the time of initial contact and the consolidated settlement.

# LATE BRONZE AND PRE-ROMAN IRON AGE POTTERY IN THE LOWER REACHES OF RIVER DAUGAVA

VANDA VISOCKA

The paper is dedicated to the pottery analysis of three hillfort pottery assemblages – Kļanģukalns, Ķivutkalns, and Vīnakalns in the region of the lower reaches of river Daugava. In this paper, the region of the lower reaches of river Daugava is referred to as the approximately 50 km long territory from Gulf of Riga to the Ikšķile district. The main aim is to determine stylistic and technological characteristics of the Late Bronze and Pre-Roman Iron Age pottery and to distinguish possible mutual production and aesthetic tendencies between these sites. For this study, two methods were used: 1) visual analysis (macroscopic) and 2) petrography (microscopic). The author macroscopically analysed 393 samples from all three assemblages, whereas 43 samples were examined microscopically. Clay pastes and tempering variations are quite homogenous in all three assemblages. However, based on visual features and patterns, Ķivutkalns and Vīnakalns pottery expresses more similarities between each other. It seems that Kļanģukalns potters had different preferences regarding stylistics of pottery.

*Keywords:* Late Bronze Age, Pre-Roman Iron Age, pottery, petrography, river Daugava, territory of Latvia, hillforts.

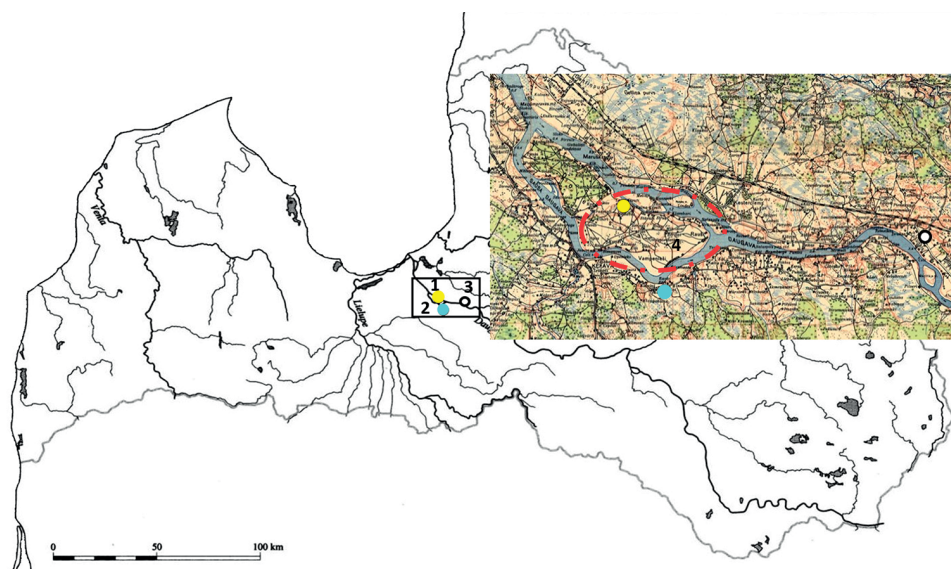
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## INTRODUCTION

The river Daugava has always been a significant route of transportation and communication in the territory of Eastern Baltic. For example, the river provided a communication route from Scandinavia to Volga-Kama region (Vasks 2015, 129). Therefore, it was especially beneficial to settle down in this region (Fig. 1). This might be one of the reasons why these three heavily fortified hillforts (Ķivutkalns, Kļanģukalns, and Vīnakalns)

were established quite close to each other in this area during the Late Bronze Age and intensively inhabited until the Pre-Roman Iron Age (Šnore 1936, 66; Graudonis 1967, 59; Vasks & Zariņa 2014, 29).

It is noteworthy that Kļanģukalns, Ķivutkalns and Vīnakalns were inhabited approximately at the same period of time, therefore these communities knew about each other's existence. At that point, it would be only coherent to assume that they had communica-



**Figure 1.** The locations of the three hillforts discussed in the article. 1 – Ķivutkalns, 2 – Kļāņukalns, 3 – Vinakalns, 4 – approximate territory of Riga's hydroelectric power plant and bank. Cropped part of the topographic map is originally from parts of topographic maps of Latvia scaled 1:75000, made by the Geodesic-Topographic Division of the Latvian army HQ in the end of the 1920s. Map taken from: <http://www.lithuanianmaps.com/Maps1931-38.html>. Drawing by Vanda Visocka.

tions with each other and some kind of mutual influences in material culture, including pottery.

As these three settlements were inhabited at the same time period and located at the same region, it would be interesting to find out, if there were similar pottery craftsmanship tendencies regarding clay pastes and tempering, as well as aesthetic or visual aspects? Are there individual tendencies in pottery production or is it the same in all three settlements? It would also be important to determine if there were influences from other regions regarding aesthetic values in pottery making? The aim

of this paper is to compare the stylistics and technological aspects between Kļāņukalns, Vinakalns, and Ķivutkalns assemblages in order to distinguish possible local and regional influences and pottery production tendencies in the lower reaches of river Daugava.

## ARCHAEOLOGICAL BACKGROUND AND CONTEXT OF THE SETTLEMENTS

In this paper, three pottery assemblages are studied from Kļāņukalns, Ķivutkalns, and Vinakalns hillforts. Before describing the ap-

plied methodology, it is important to mention the archaeological context of these hillforts.

The Kļanģukalns hillfort is located in the Ķekava district, approximately one kilometre from river Sausā Daugava (Dry Daugava) next to the Dole island. The site is located only a few kilometres away from Daugmale, Ķivutkalns, and Sakaiņu hillforts. During World War I, trenches were dug into the hillfort, and therefore the cultural layer has been disturbed.

In 1935, an archaeological excavation led by archaeologist Rauls Šnore was held in Kļanģukalns. During the excavations, a section of the plane was studied as well as a few probationary trenches dug in the area of bulwark at the south-western part of the hillfort. During the excavation, 3707 pottery sherds, animal bones, as well as bronze, iron, and stone artefacts were found (Šnore 1936, 57–58, 60–63). Inhabitation of Kļanģukalns was dated from Late Bronze Age to 2<sup>nd</sup> Century AD (Šnore 1936, 66).

It is noteworthy that the archaeologists did not record the stratigraphy of the settlement. Therefore, it is difficult to determine changes in pottery styles as well as the precise location of the artefacts. It should also be noted that, after 1936, archaeologists have not taken much interest in the Kļanģukalns hillfort. Only a few studies mention Kļanģukalns in the wider context of the Late Bronze Age (see Graudonis 1989; Vasks 1991; Vasks 2010; Visocka 2017a).

The Ķivutkalns hillfort was located in the Salaspils (now Ķekavas) district in the middle of Dole island between river Daugava and Pižaga. Like at Kļanģukalns, a network of trenches was dug around the Ķivutkalns hillfort during World War I. The area has also

been extensively used in agriculture by the locals. Therefore, the cultural layer has been partly disturbed as well.

In the period from 1966 until 1967 archaeological excavations led by archaeologists Jolanta Daiga and Jānis Graudonis were held at the settlement. Because of the construction of the Riga Hydroelectric Power Plant, the site was fully studied and now sits below the surface of a water reservoir. During the excavations more than 2700 artefacts and approximately 38 000 pottery sherds, including almost intact vessels, bone fragments, and seeds were found (Graudonis 1968, 21).

The Ķivutkalns settlement was inhabited from the Late Bronze Age until the 2<sup>nd</sup> Century AD (Vasks & Zariņa 2014, 29). Archaeologist Jānis Graudonis was able to date several layers: layers one to three date to the second half of the second millennium BC, layers four to six date to the first quarter and second quarter of the second millennium BC, and layers seven to nine date to approximately 1000 BC (Graudonis 1989, 21). It is notable that under the cultural layer of the settlement a settlement grave field was found.

The Vinakalns hillfort was located in the Ikšķile district, about two kilometres west from the Ikšķile city. To the south of the settlement was Daugava and to the east a small river. The cultural layer of the settlement was damaged by the locals in the 19<sup>th</sup> Century, trenches were dug into it during World Wars I and II and, later, damage resulted from Russian military presence (Graudonis 1989, 55).

In 1967, the Vinakalns hillfort was fully studied by archaeologist Jānis Graudonis due to the construction of the Rīga-Ogre highway. During the excavation 280 artefacts, 3057 pottery sherds, including whole vessels, ani-

mal bones, etc. were found (Graudonis 1968, 57). The hillfort was inhabited from the beginning until the end of the first millennium BC.

## MATERIAL AND METHODOLOGY

All three pottery assemblages mainly consist of pottery sherds. Only in some cases partly full vessels were preserved. Therefore, this study is based mainly on pottery sherd analysis through visual observations and petrography. For the analysis, rim sherds with identifiable surface treatment, wall thickness, and profile shape as well as all samples with distinguishable ornamentation were chosen. Sherds that are believed to be part of the same vessel have been analysed as one sample. Due to their fragmentary characteristics, bottom fragments were not analysed in this study. In total, it was possible to analyse 49 samples from Kļauģukalns, 199 samples from Ķivutkalns, and 145 samples from the Vinakalns assemblage.

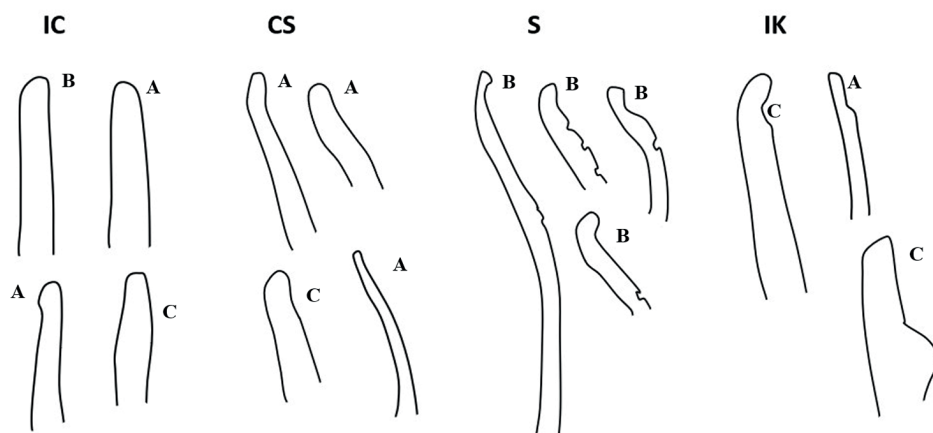
As the main aim of this study is to determine the mutual influences between pottery traditions in these hillforts, it is important to compare visual attributes (surface treatment, profile shape of the rims, and ornamentation) to the structure of the clay paste as well as the materials used as temper. Therefore, assemblages were studied by visual observations and petrographic analysis.

In visual observations, the profile form of the vessels, as well as surface treatment, wall thickness, and ornamentation were studied and classified. Using these data, the technological aspects and stylistics were compared in order to determine possible influences

from other areas. As for classification of the rim shape of the vessels, Rimute Rimantiene vessel profile form classification with modifications by Andrejs Vasks (with the additional IK as in Vasks 1991, 21) was used. Also, because in most cases it is difficult to distinguish between I and C shape (Bērziņš 2003, 54–55), the additional IC was used in this study. IC is barrel-shaped, CS is slightly curved, S is curved, and IK is biconical medium curved axis in the shoulder part of the vessel (Fig. 2).

For ceramic petrography (for detailed description of method, see Freestone 1995; Quinn 2013) the analytical method used was analysis of a thin section of the clay paste under a polarizing microscope. Using petrography, the main tendencies of the clay paste and variations of tempering materials of the ware were studied.

In total, 43 thin sections were made (19 samples from Ķivutkalns, 16 from Kļauģukalns, and eight from Vinakalns materials) (Table 1 in Appendix). Pottery samples were chosen to make up a representative selection of the surface treatment variation. As striated pottery is the dominant type in the analysed assemblages, 22 thin sections were made from this group, together with 12 from smoothed, seven from textile impressed, and two thin sections from striated coarse-slipped pottery. The wall thickness of the chosen samples varied from 0,7 cm to 1,8 cm. Each thin section sample was taken from the middle part of the sherd, which was cut in the half in the vertical axis.



**Figure 2.** Rim shape variations of the analysed pottery. A – Җивуткалнс, B – Клаңгукалнс, and C – Винакалнс. IC – barrel-shaped, CS – slightly curved, S – curved, and IK – biconical medium curved. *Drawing by Vanda Visocka.*

## CLAY PASTE AND TEMPERING VARIATIONS

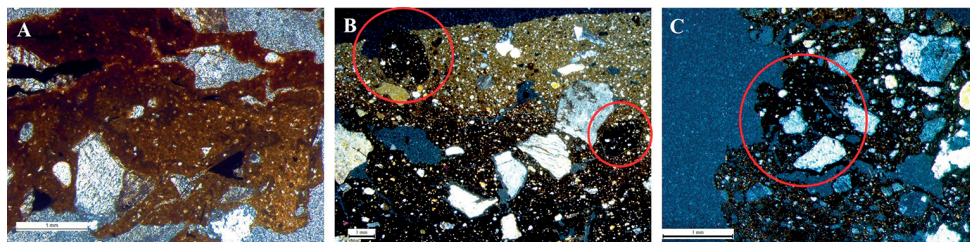
Glaciers covered the region of Eastern Baltic during the Ice Age, therefore secondary clay from the Quaternary period is present in the area. Therefore, the clay is mixed and contains natural impurities such as sand, silt, and organics (Stinkule & Stinkulis 2013, 56). It is notable that there are no records on excavation reports about pottery production at any of these hillforts, therefore it is impossible to precisely distinguish imported vessels from the local ones.

Overall, three variations of clay paste used for pottery production were distinguished by the coarseness of it: fine, medium-coarse, and coarse. In the Җивуткалнс and Клаңгукалнс, mostly medium-coarse clay paste was used to make pottery. In Винакалнс, fine and coarse paste are the most common. It is notable that in Клаңгукалнс, fine clay paste is quite rare – only one sample was distinguished.

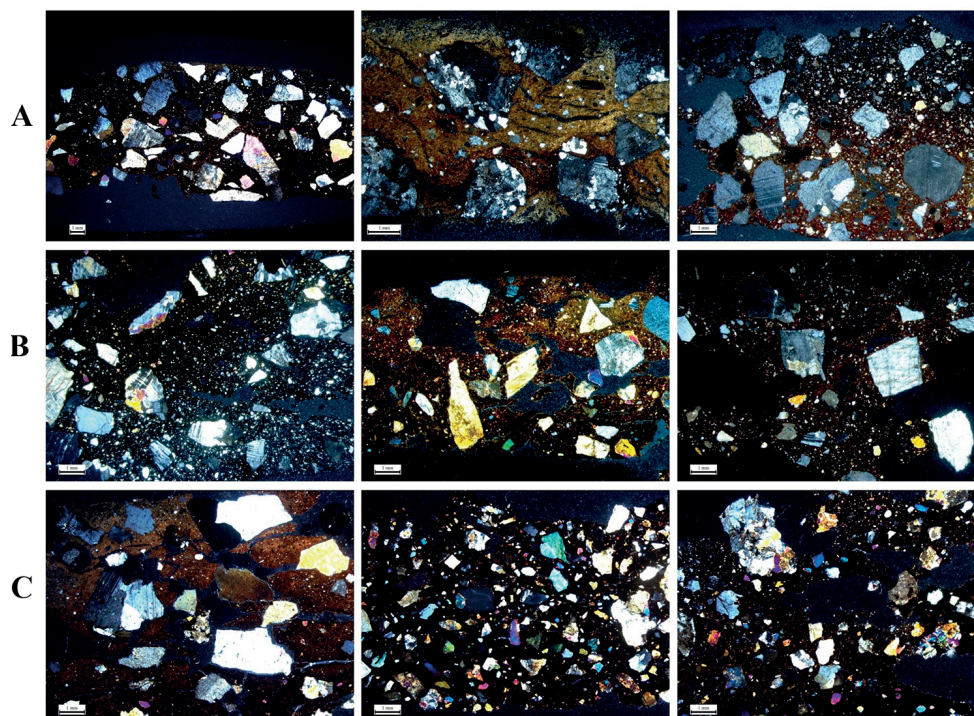
Interestingly, in one of the Җивуткалнс samples, it seems that possibly two mixed clays were used to make a vessel as they are not linear to each other to be from naturally variable clay source (Fig. 3: A). In one of the Клаңгукалнс samples, dark brown, round, and subangular argillaceous inclusions (i.e. clay pellets) are seen (Fig. 3: B). These clay concretions consist of silt and some fine sand grains and although the structure is similar to the clay paste used for the pot, it seems less coarse. The size of these clay lumps reaches 1,5 mm. Both of these occasions indicate that the clay paste was kneaded and blended poorly (Kadron & Rauba-Bukowska 2017, 423). It could be possible that these pots were made in a hurry or by a young and inexperienced potter.

Most common tempering material in all of the analysed assemblages is granitic rock as clay pastes in these samples mostly consisted of quartz and feldspar mineral grains (Fig. 4). Four granitic rock tempering qual-



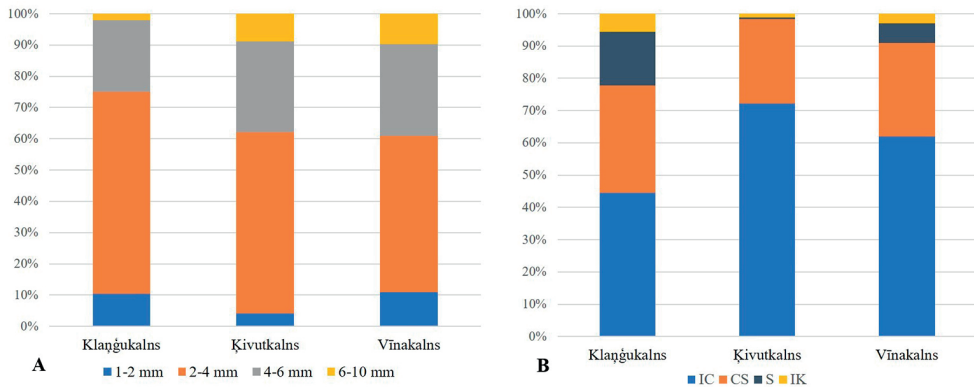


**Figure 3.** Photomicrographs of the pottery samples. A – two mixed clays, Çivutkalns, plain polarized light; B – clay pellets, Klaņģukalns, crossed polarized light; C – grog combined with granitic rock tempering, Çivutkalns, crossed polarized light. *Photos by Vanda Visocka.*



**Figure 4.** Photomicrographs of the pottery samples with granitic rock tempering. Crossed polarized light. A – Çivutkalns, B – Klaņģukalns, and C – Vinakalns. *Photos by Vanda Visocka.*



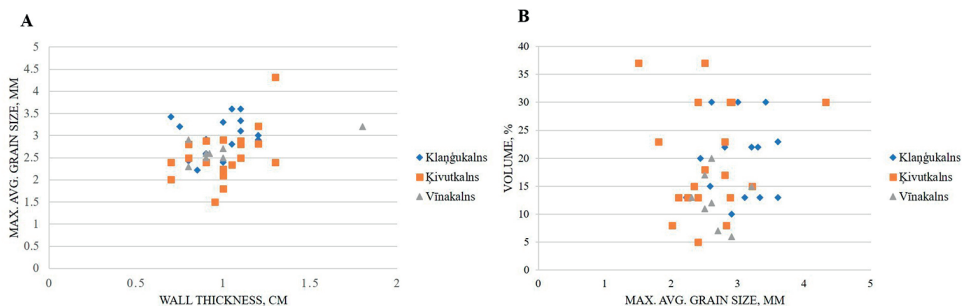


**Figure 5.** Percentage of vessels with different tempering coarseness by size (A) and by type of profile shape (B) in the settlements.

ities were distinguished: 1) Fine (1–2 mm); 2) Medium-coarse (2–4 mm); 3) Coarse (4–6 mm) and 4) Very coarse (6–8 mm). Overall, the coarseness tendencies of the granitic rock tempering are similar in all of the assemblages. As it is seen, potters mainly preferred to add medium coarse granite tempering to the clay (Fig. 5: A).

Overviewing the ratios between tempering material and pottery properties, it is seen that in Ķivutkalns and Vīnakalns, with some ex-

ceptions, the coarseness of the grains depends on the wall thickness of the pot. However, it is also possible that the wall thickness depends on the coarseness of the clay paste. In Kļauģukalns the ratio is more random, i.e., there is no clear correlation between the tempering coarseness and wall thickness of the vessels (Fig. 6: A). This result indicates that Kļauģukalns potters produced vessels with greater variety in wall thickness. This does not mean that Ķivutkalns and Vīnakalns potters did not aim to produce vessels with varying wall



**Figure 6.** Correlation between different tempering and pottery proprieties. A – correlation between max. avg. grain size and wall thickness. B – correlation between max. avg. grain size and volume in clay paste.

thickness, it only indicates that the coarseness of the temper had its role in that decision.

Comparing the ratio of the grain size to the added amount of the tempering material, the same random tendency is seen in all three assemblages: there is no clear correlation between these properties (Fig. 6: B). It is possible that the amount of added temper was dictated by the properties of the chosen clay (too plastic or aplastic, etc.), rather than other aspects. Therefore, such a result is not surprising.

Notably, in one of the Ķivutkalns samples, grog and granitic rock was used as tempering material (Fig. 3: C). The tempering material can be identified as grog because of the sharp angularity of the grains, partial shrink around the grains, as well as the structure of the tempering material, which consists of crushed quartz and silt (Herbert & Smith 2010, 11–12). The grog grains are from ceramics which had been fired at approximately the same or at a marginally higher temperature than the vessel to which they were added because the grog particles are darker than the clay paste (Quinn 2013, 58). Only small amounts of grog were added to the clay paste (only a few grains were identified), and the dominant tempering material in this sample is granitic rock. The grog grains reach a particle size of 1,7 mm, whereas granitic rock grains in the clay paste are 2,3 mm in size.

It is interesting that in the Kļanģukalns and Vīnakalns materials no vessels tempered with grog were distinguished. As these hillforts were inhabited at approximately the same time period, there is a small chance that these communities did not know about each other's existence. Therefore, it is possible that Kļanģukalns and Vīnakalns potters knew about the grog tempering tradition but did not use it in their

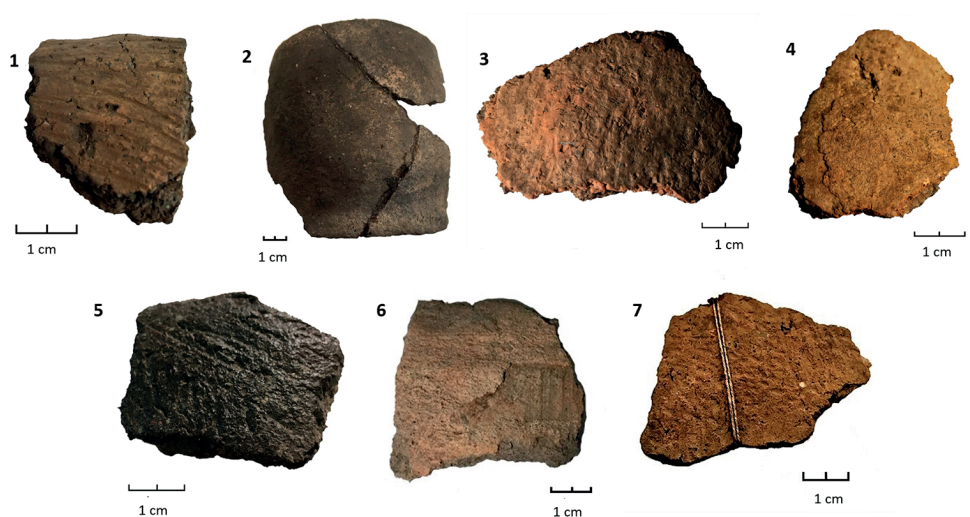
production because of symbolic or other kind of reasons (for example, aspect of the ancestor traditions, "law" of the community, etc.). Such a tendency has been reported in various ethnoarchaeological studies (for example, Gosse-lain 2008, 163), and it might be applicable in this case as well. Small amounts of grog temper can be distinguished in pottery material from the Padure and Krievu kalns hillforts in western Latvia and the Brikulī hillfort in eastern Latvia (Visocka 2017a, 59–60). This might indicate some techno-cultural influences between these sites.

It is also possible that the Ķivutkalns vessel was imported from a different area or made by an in-married potter in a region where this kind of tempering tradition would have been more common (c.f. Holmqvist et al. 2018). However, as mentioned before, it is problematic to distinguish imported vessels from local ones, and further research should be done on this topic before rushing to conclusions.

Overall, with some exceptions, in all three assemblages similar tempering technological aspects can be seen, such as preference of medium-coarse granitic rock temper over fine or coarse grains.

## **TENDENCIES OF SURFACE TREATMENTS AND RIM SHAPE OF THE VESSELS**

The dominant surface treatment in all the analysed assemblages is striated pottery. In Kļanģukalns, 50,3 % of the samples are of striated pottery, in Ķivutkalns 88,43 %, and in Vīnakalns 90,17 %. This result was expected because the lower reaches of river Daugava are situated in the territory of the archaeological culture of striated pottery (Vasks 1991,



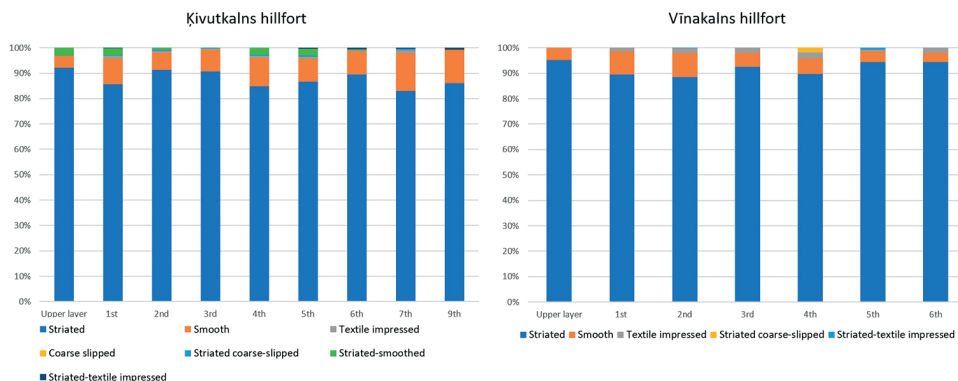
**Figure 7.** Surface treatment variations. 1 – striated (Klaņģukalns LNVM inv.no. A 9960:77), 2 – smooth (Ķivutkalns, LNVM inv. no. VI 120), 3 – textile impressed (Vīnakalns, II field, 1st layer), 4 – coarse-slipped (Ķivutkalns, LNVM inv. no. VI 120), 5 – striated-smoothed (Ķivutkalns, LNVM inv. no. VI 120), 6 – striated coarse-slipped (Vīnakalns, inbetween profile of the I/IV field, LNVM inv. no. in the process of registration), and 7 – striated textile impressed (Ķivutkalns, LNVM inv. no. VI 120). *Photos by Vanda Visocka.*

119).

It is notable that vessels from Ķivutkalns and Vīnakalns show more variety in surface treatment than those from Klaņģukalns. In addition to striated pottery, Ķivutkalns contains smooth (9,09 %), textile impressed (0,58 %), and early coarse-slipped (0,03 %) pottery. Early coarse-slipped pottery is a local variation of classical slipped pottery. Whereas in classical slipped pottery the surface of the vessel is strewn with clay plaster, in early coarse-slipped pottery a thin coating of grainy clay has been added on the surface of the pot.

On some vessels from Ķivutkalns there are combinations of two surface treatments – striated-smoothed (lightly striated pottery with a smooth and shiny surface: 1,39 % of all

samples), striated coarse-slipped (the vessel has been striated and then a thin, sandy layer of clay has been added before firing: 0,58 % of samples), and striated-textile impressed (the vessel surface is treated with both striations and textile impressions: 0,14 % of samples) (Fig. 7). Similar surface treatment tendencies are seen in the Vīnakalns assemblage (smooth: 7,90 %, textile impressed: 1,70 %). Although rare, in this settlement, pottery with two types of surface treatment can be distinguished as well; striated coarse-slipped (0,15 %) and striated-textile impressed (0,08 %). In the Klaņģukalns assemblage, in addition to striated pottery, only smooth (49 %) and textile impressed (0,7 %) treatment can be identified. In this settlement material, there



**Figure 8.** Percentages of pottery types by surface treatment in the stratigraphic layers of Kivutkalns and Vinakalns.

is no coarse-slipped treatment or vessels with a combination of two surface treatments. The pottery of this settlement differs from the other assemblages in containing a high amount of smooth pottery.

As striated pottery is a marker for ‘archaeological culture’ or a local pottery tradition (Graudonis 1980; Vasks 1991), other variations, with the exception of smooth pottery, can be considered as influences from other regions. In this case, especially interesting are those vessels that combine two surface treatments on one vessel. These mark a new tradition where the local and foreign techniques interact with each other, resulting in a new pottery style (Vasks 1991, 41; Eriksson 2012, 186). Such an interaction between styles in a way shows that the society was ready to change or that it was, for practical or symbolical reasons, sufficiently open-minded to new techniques regarding the visual appearance of the pottery (Visocka 2017b, 16).

In reviewing changes in surface treatment tendencies in relation to the recorded stratigraphy at the Kivutkalns and Vinakalns hillforts (as mentioned, stratigraphic analysis is not

possible in the Kļauņkalns case as the archaeologists did not catalogue the finds according to stratigraphic layers during the excavation), it can be observed that striated pottery is dominant in all inhabitation periods from the Late Bronze Age to the Pre-Roman Iron Age (Fig. 8). In the Kivutkalns assemblage, smooth and textile impressed as well as striated coarse-slipped pottery occurs during all inhabitation periods, whereas striated-textile impressed pottery does not occur in between the second quarter and second half of the first millennium BC. After this period, the surface treatment tradition is “restored” in the latest inhabitation period. It is notable that textile impressed pottery continues to exist. Striated-smoothed pottery occurs in the first quarter of the first millennium and continues until the end of the inhabitation. Early coarse-slipped pottery occurs in the second half of the first millennium in small amounts (two samples).

In Vinakalns, it is problematic to precisely date the layers studied, but it is still possible to analyse the change of the surface treatment tendencies, assuming the deepest are chronologically older than the higher ones (Fig. 8).



**Figure 9.** Amphora-shaped vessel from Kivutkalns (LNVM inv.no. VI 120). *Photos by Vanda Visocka.*

Similarly, as in Kivutkalns, smooth and textile impressed pottery occurs in all of the layers, whereas striated-textile impressed pottery occurs only in the second and fifth layers. Three fragments of striated coarse-slipped pottery were found in this settlement (Viso-

cka 2017a, 6). This is particularly interesting because the sherds belong to one vessel (same tempering, structure, wall thickness, and context), and there is no other such vessel in the settlement material. Furthermore, unlike at Kivutkalns, no coarse-slipped pottery was

**Table 2.** The amount of rim shapes with different surface treatments.

		SHAPE			
Klaņģukalns	SURFACE TREATMENT	IC	CS	S	IK
	Striated	11	7	6	1
	Smooth	5	5	-	1
Kivutkalns	Striated	98	37	1	1
	Smooth	23	8	-	1
	Striated coarse-slipped	2	-	-	-
	Striated-smoothed	7	2	-	-
Vīnakalns	Striated	52	25	6	3
	Smooth	8	2	-	-
	Textile-impressed	1	-	-	-
	Striated-textile impressed	1	1	-	-

found in the more recent layers. Therefore, no continuation or “evolution” can be established between striated coarse-slipped pottery and early coarse-slipped pottery.

The dominant profile shape of the vessels in all the analysed assemblages is barrel-shaped (IC), while slightly curved (CS) is also quite common. In Kļanġukalns, vessels with curved profile form (S) are more common than in Ķivutkalns and Vīnakalns pottery (Fig. 5: B). One very rare shape in all the analysed assemblages is biconical with medium curved axis (IK). Although distinguished in other Late Bronze and Pre-Roman Iron Age hillforts in the Eastern Baltic, such a shape is not widely spread in these assemblages. Biconical vessels with medium curved axis are more common in Scandinavia and on Saaremaa island, therefore such vessels might be inspired by traditions native to those regions (Jaanusson 1981, 83 – 86).

It is notable that, in the Ķivutkalns material, the shape of one vessel fragment gives reason to think that it might belong to an amphora (Fig. 9) (personal communication with Baiba Dumpe, 10.3.2018). Such vessels have not been distinguished in the Kļanġukalns or Vīnakalns materials or in other hillfort assemblages in the territory of Latvia dated to the Late Bronze Age or Pre-Roman Iron Age. There is no clear data about the technological origin of this vessel.

When analysing the correlation between vessel shape and surface treatment, it became evident that barrel-shaped vessels are dominant in all variations of surface treatment (Table 2). It is notable that, in the case of smooth pottery, an interesting pattern can be observed: there are no vessels with curved shape found in any of these settlements. It is also no-

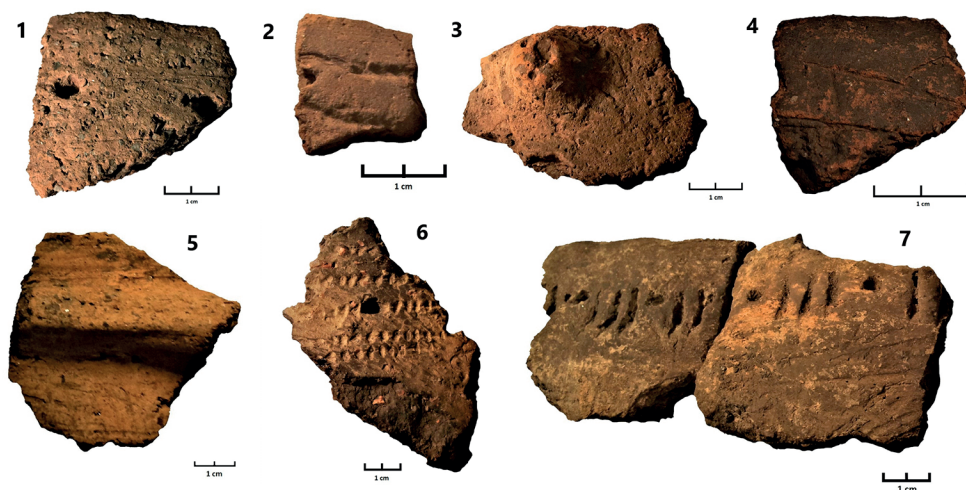
table that a similar situation can be observed concerning the vessels with two surface treatments as well: in all of these cases, the vessels do not have a curved or biconical shape. Such a result could be explainable with the function of the vessel. However, further research should be conducted to study this aspect.

## ORNAMENTATION

In the Eastern Baltic region (as well as in Scandinavia) during the Late Bronze Age and Pre-Roman Iron Age, ornamented vessels are rare (Jaanusson 1981, 113; Vasks 1991, 23). Overall, in the analysed assemblages, ornamented vessels do not make up more than 1 % of the total number of vessels (in Kļanġukalns 0,86 % of total, in Ķivutkalns 0,35 % of total, and in Vīnakalns 1 % of total). Five main variations of ornamentation can be distinguished in the analysed assemblages (Fig. 10: 1–5):

**Pits.** This ornament is made by using a straw-like object that is pressed against the vessel's surface (Vasks 1994, 50). There are various shapes of pits distinguished: oval, elongated, corked, etc. They mostly occur on the upper part of the vessel, in separate occasions on the neck and shoulder, and mainly in one row. This is the most common of all the variations and it has been distinguished in all the analysed assemblages. The pit decoration mainly occurs on vessels with a striated surface. Pit impressions are a common ornamentation in other settlements in the Eastern Baltic as well (for example, Asva, Ridala, Iru, and Kaali fortified settlements in Estonia) and Scandinavia (for example, Hallunda and Otterböte in Sweden, and Toispuolajannummi in Finland) (Lang 2006, 124; Jaanusson 1981, 115; Gustavsson 1997, 51; Asplund 2008,





**Figure 10.** Variations of ornaments. 1 – pits (Vinakalns, II field-2nd layer) 2 – cord marks (Kivutkalns, LNVM inv. no. VI 120), 3 – knobs (Kivutkalns, LNVM inv. no. VI 120), 4 – line incisions (Kivutkalns, LNVM inv. no. VI 120), 5 – bands (Vinakalns, LNVM inv. no. VI 120), 6 – cord marks combined with pits (Kivutkalns, LNVM inv. no. VI 120), and 7 – line incisions combined with pits (Kivutkalns, LNVM inv. no. VI 120). *Photos by Vanda Visocka.*

205).

**Cord marks.** These are pressed on the upper part of the pot by using a straw-like object with cord wrapped around it (Vasks 1994, 50). In the Lower reaches of river Daugava such ornamentation occurs only in Kivutkalns. It is notable that cord mark impressions are distinguished in two assemblages further up the river Daugava at Dievukalns and Mūkukalns (Visocka 2016, 82). Cord marks occur mostly on striated vessels as, a tendency that can be seen in Toispuolajannummi and Hallunda assemblages as well (Jaanusson 1981, fig. 58; Gustavsson 1997, 76).

**Knobs.** The ornament is a small oval clay bumps on the surface of the vessel. Knobs are either made separately and added on the pot afterwards or while making the pot (Visocka 2016, 86). Such an ornamentation is distin-

guished only in Kivutkalns. Analogies of this ornamentation are found in Krievu kalns hill-fort (in the western part of Latvia) as well as in Scandinavian Late Bronze Age and Pre-Roman Iron Age pottery (Jaanusson 1981, fig. 29, fig. 32, fig. 34; Visocka 2016, 86).

**Line incisions.** This type of decoration is made by using a sharp tool. Compositions of, for example, vertical, horizontal, and inclined lines in a row normally appear on the upper part of the vessel (Vasks 1991, 49). Line incisions occur in all three analysed assemblages. Motifs are quite simple; mostly thin vertical or inclined lines. In Kivutkalns, ornamentation similar to the multilinear chevron motif is used on the vessel's surface. Similar motif can be seen in the Hallunda pottery (Jaanusson 1981, 117). However, in Scandinavia and on Saaremaa island there are more variations



of line incision motifs (Jaanusson 1981, fig. 55; Lang 2006, 126; Sperling 2014, fig. 103).

**Banks.** While appearing as a structural part of the pot, a bank is a band of clay that has been added on the shoulder or the upper part of the vessel and blended in after its completion (Graudonis 1989, 49). It is likely that the bank is added for decorative rather than functional purposes, and it could also have been an attempt to copy the shape of strongly curved biconical vessels. This decor occurs only in those Ķivutkalns and Vīnakalns vessels with smooth or striated surface. Vessels with banks around the shoulder are distinguished in Scandinavian and Saaremaa pottery as well (Jaanusson 1981, fig. 29, fig. 33; Sperling 2014, fig. 84).

It is notable that in Ķivutkalns there are also two ornamental compositions distinguished: 1) cord marks combined with pits (Fig. 10: 6), and 2) line incisions combined with pits (Fig. 10: 7). In the territory of Latvia, such a combination of ornaments is seen in the Mūkukalns, Brikuļi, and Rušenica hillforts (Visocka 2016, 82).

Overall, the results show that in Ķivutkalns there is more variety in ornamentation and decorative motifs than in Kļāņgukalns and Vīnakalns. It is notable that Ķivutkalns and Vīnakalns ornamentation share more similarities with each other than they do with Kļāņgukalns.

## CONCLUSIONS

In all hillforts, pottery was made from sand and silt rich secondary clay. However, as there were no traces of pottery production on these sites, it is not possible to precisely determine which vessels were produced locally and which

ones were imported from other regions. This is especially hard with untypical vessels.

When observing clay paste qualities, it seems that potters had different preferences regarding to coarseness of the clay paste used for the production of the vessel. Inhabitants of Ķivutkalns and Kļāņgukalns made pottery mostly with medium coarse clay paste, whereas in Vīnakalns potters preferred fine and coarse pastes.

Mainly granitic rock was used as tempering material in the clay in all three assemblages. This might be due to the prevalence and therefore availability of this material in the region. When comparing the grain size of the temper to the wall thickness of the vessel, it is seen that overall in Ķivutkalns and Vīnakalns the coarseness of the clay paste depends on the desired wall thickness, but the opposite – the coarseness of the clay paste dictating the thickness of the wall – might have equally been the case. In Kļāņgukalns, it seems that the clay paste coarseness was not a strong factor in determining the wall thickness of the vessel.

In Ķivutkalns, a vessel with grog and granitic rock tempering was distinguished. As there were only a few grog grains in the clay paste, the grog could have been added for symbolic rather than functional reasons. Grog tempering is not typical in the region of the lower reaches of river Daugava and no samples with grog tempering were found in the Vīnakalns and Kļāņgukalns assemblages. Regarding grog temper, it seems that there might be techno-cultural influences from regions of western and eastern part of Latvia. Further research should be done on this topic, and presently there is not enough data for more precise interpretations.

Regarding visual appearance and the aesthetic attributes of the pottery, both differences and similarities can be distinguished between the studied assemblages. Aesthetic influences are best seen in the surface treatment variations and ornamentation of the vessels. However, it is problematic to determine from which region such influences come. It is possible that textile pottery came from regions (for example, Saaremaa, the Baltic sea coast of Scandinavia, the eastern part of Latvia, etc.) whose inhabitants travelled on river Daugava and had connections with the settlements located along the river. This might not be true in the case of early coarse-slipped pottery which is a local type in the territory of Latvia. Early coarse-slipped pottery is quite common in the western part of Latvia (Padure, Paplaka, and Krievu kalns hillforts) and therefore it is possible that such an influence might have originated from that region.

Several rare ornaments were distinguished in the Ķivutkalns assemblage; knobs and cord marks, as well as decorative motifs, cord marks combined with pits and line incisions combined with pits. In the territory of Latvia, these motifs are more common in the inland pottery (Brikuļi and Rušenica hillforts), although similar motifs have also been found at sites closer to Ķivutkalns, such as the Mūkukalns hillfort. This might indicate a transmission route from inland to the region of the lower reaches of river Daugava. Compared to Ķivutkalns and Vinakalns, Kļanġukalns pottery has more simplistic ornamentation where potters seem to have preferred pits and line incisions.

Individual aspects are seen in the rim shape of the vessels. For example, the potters of Kļanġukalns produced proportionately more vessels with a strongly curved profile

(S) than those of Ķivutkalns and Vinakalns. Among the Ķivutkalns assemblage, one fragment of an amphora-shaped (?) vessel was identified. Though it is not known whether this vessel was imported, it is atypical not only of this settlement but also of the larger territory. Looking at its slightly biconical (IK) rim shape, it is possible that these forms were influenced by Scandinavian or Asva pottery traditions.

Overall, based on surface treatment, rim shape, and variations in ornamentation, it seems that there was independent pottery production at Kļanġukalns. It is possible that the inhabitants of Kļanġukalns had a cultural tradition of their own, at least in terms of the visual appearance of their pottery. The similarities between clay pastes and tempering materials in all three hillforts can be explained with the homogeneousness of the geological environment. Nevertheless, further research on the topic is needed.

## ACKNOWLEDGMENTS

The author would like to thank the National History Museum of Latvia for permission to make the petrographic analyses on the pottery assemblages, and the University of Latvia Faculty of Geography and Earth Sciences for allowing use of their equipment for preparation of the thin sections. Personally, the author would like to thank researcher Baiba Dumpe from the National History Museum of Latvia Department of Archaeology, and senior researcher Andrejs Vasks from the University of Latvia Institute of Latvian history, Department of archaeology, for consultation.

## REFERENCES

- Asplund, H. 2008. *Kymittä: Sites, Centrality and Long-Term Settlement Change in the Kemijoki Region in SW Finland*. Turun Ylipisto, Turku.
- Bērziņš, V. 2003. Sārņates apmetnes keramikas klasifikācija un statistiskā analīze. *Arheoloģija un Etnogrāfija*, 21, 53–74.
- Eriksson, T. 2012. Pottery, Transmission and Innovation in Mälardalen. In *Local Societies in Bronze Age Northern Europe*. Eds. N. Anfinset & M. Wrigglesworth. Routledge, Sheffield, 185–200.
- Freestone, I.C. 1995. The petrographic examination of ceramics. *American Journal of Archaeology*, 99 (1), 111–115.
- Gosselain, O. 2008. Mother Bella was not a Bella. Inherited and transformed traditions in South-western Niger. In *Cultural Transmission and Material Culture. Breaking Down Boundaries*. Eds. M.T. Stark, B.J. Bowser & L. Horne. The University of Arizona Press, Tucson, 150–177.
- Graudonis, J. 1968. Nocietinātā apmetne Vinakalnā. *ZASM* 1967, 57–60.
- Graudonis, J. 1980 = Граудонис Я. 1980. Штрихованная Керамика на Территории Латвийской ССР и Некоторые Вопросы Этногенеза Балтов. In *Из Древнейшей Истории Балтских Народов*. Eds. J. Denisova, A. Zagorskis, & E. Mugurevics. Riga, 59–69.
- Graudonis, J. 1989. *Nocietinātās apmetnes Daugavas lejtece*. Zinātne, Riga.
- Gustavsson, K. 1997. *Otterböte. New Light on a Bronze Age site in the Baltic*. Stockholm University, Stockholm.
- Herbert, J.M. & Smith, M.S. 2010. Identifying Grog in Archaeological pottery. Manuscript of paper for the First Annual Reconstructive/Experimental Archaeology Conference (RE-ARC) held in Gastonia, NC.
- Holmqvist, E., Larsson, A.M., Kriiska, A., Palonen, V., Pesonen, P., Mizohata, K., Kouki, P. & Räisänen, J. 2018. Tracing grog and pots to reveal Neolithic Corded Ware Culture contacts in the Baltic Sea region (SEM-EDS, PIXE). *Journal of Archaeological Science*, 91, 77–91.
- Jaanusson, H. 1981. *Hallunda. A study of pottery from a Late Bronze Age settlement in central Sweden*. Statens historiska museum, Stockholm.
- Kadron, S. & Rauba-Bukowska, A. 2017. The technology of Neolithic pottery north and south of the western Carpathians. In *The Exploitation of Raw Materials in Prehistory: Sourcing, Processing and Distribution*. Eds. T. Pereira, X. Terradas & N. Bicho. Cambridge Scholars Publishing, Cambridge, 414–432.
- Lang, V. 2006. Late Bronze and Pre-Roman Iron Age pottery styles in Estonia. In *Lighting the Darkness. The Attraction of Archaeology. Papers in Honour of Christian Carpelan*. Ed. M. Suhonen. Helsingin yliopisto, kulttuurien tutkimuksen laitos, arkeologia, Helsinki, 122–136.
- Quinn, P.S. 2013. *Ceramic Petrography. The Interpretation of Archaeological Pottery & Related Artefacts in Thin Section*. Archeopress, Oxford.
- Šnore, R. 1936. Izrakumi Doles pag. Kļāņu pilskalnā. *Senatne un Māksla*, 1, 57–69.
- Sperling, U. 2014. *Aspekte Des Wandels in der Bronzezeit im Ostbaltikum: Die Siedlungen der Asva-Gruppe in Estland*. Estonian Journal of Archaeology, 18/2S.
- Stinkule, A. & Stinkulis, G. 2013. *Latvijas derīgie izrakumi*. LU Akadēmiskais apgāds.
- Vasks, A. 1991 = Васк А. 1991. Керамика эпохи поздней бронзы и раннего железа Латвии. Рига.
- Vasks, A. 1994. *Brikuļu nocietinātā apmetne: Lubāna zeme vēlajā bronzas un dzelzs laikmetā (1000. g. pr. Kr. – 1000. g. pēc Kr.)*. Preses nams, Riga.
- Vasks, A. 2010. Latvia as part of a sphere of contacts in the Bronze Age. *Archaeologia Baltica*, 13, 153–161.
- Vasks, A. 2015. *No medniekiem un zvejniekiem līdz lopkopjiem un zemkopjiem: Latvijas aizvēstures senākais posms (10500. – 1. g. pr. Kr.)*. Zinātne, Riga.
- Vasks, A. & Zariņa, G. 2014. Ķivutkalna pilskalns un kapulauks: jauni dati un jaunas problēmas. *LVIŽ*, 3 (92), 5–36.
- Visocka, V. 2016. Dekoratīvie elementi vēlā bronzas laikmeta keramikā Latvijas teritorijā. In *Lietišķi ģeoloģiskie pētījumi, jaunas tehnoloģijas, materiāli un produkti*. Ed. V. Segliņš. Riga, 78–89.
- Visocka, V. 2017a. Pottery and hillforts. Some aspects of pottery production during the Late Bronze Age in the territory of Latvia. *LU žurnāls. Vēsture*, 4 (99), 53–65.
- Visocka, V. 2017b. Švīkāts-apmests trauks Vinakalna keramikas kolekcijā. *LVIŽ*, 4, 5–24.

## APPENDIX

**Table 1.** Data of the petrographically analysed samples.

KIVUTKALNS					
KIV6	KIV5	KIV4	KIV3	KIV2	KIV1
VI 120	VI 120	VI 120	VI 120	VI 120	VI 120
Striated	Striated	Striated	Striated	Striates	Striated
0.8	1	0.8	0.9	1.1	1.1
3	3	4	3.5	4	5
-	IC	S	IC	IC	IC
Coarse	Corse	Medium	Medium	Medium	Medium
Unsorted	Unsorted	Unsorted	Unsorted	Unsorted	Unsorted
Common	Rare	Common	Common	Rich	Rich
Rich	Common	Rich	Rich	Rich	Common
Common	Rich	Rich	Rich	Rich	Common
Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock
18	23	23	37	17	37
3	3	3.5	2	3.8	5
2.5	1.8	2.8	1.5	2.8	2.5
Iron rich clay paste	Iron rich clay paste				Organics?

KIV16	KIV15	KIV14	KIV12	KIV11	KIV10	KIV9	KIV8	KIV7
VI 120	VI 120	VI 120	VI 120	VI 120	VI 120	VI 120	VI 120	VI 120
Smooth	Striated	Striated	Striated	Smooth	Smooth	Smooth	Textile	Textile
0.7	1.3	1	1.2	1	1	0.7	1.3	1
-	6	5	2.3	4	3.5	3	2	6
IC	-	IC	IC	-	IC	IC	-	-
Medium	Fine	Fine	Coarse	Medium	Coarse	Coarse	Coarse	Medium
Unsorted	Sorted	Sorted	Unsorted	Unsorted	Unsorted	Sorted	Unsorted	Unsorted
Common	Common	Rich	Rich	Rare	Rare	Common	Common	Rare
Common	Rare	Rare	Common	Common	Common	Common	Common	Common
Common	Rare	Rare	Common	Common	Rich	Rich	Rich	Common
Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Grog + Granitic rock	Granitic rock
8	30	15	8	13	13	5	13	30
3.9	5.9	3.3	3.2	2.8	4.1	3.9	2.9	5
2	4.3	2.3	2.8	2.2	2.1	2.4	2.4	2.9
	Two clay pastes mixed							Iron rich clay paste

KL4	KL3	KL2	KL1	KLAŃGUKALNS					
				KIV20	KIV19	KIV18	KIV17		
A9960:84b	A9960:77	A9960:27b	A9960:60c	VI 120	VI 120	VI 120	VI 120		
Textile	Striated	Striated	Striated	Smooth	Textile	Striated coarse-slipped	Striated		
1.2	1	1	0.7	1.1	1.2	0.9	0.9		
6.5	4	5	4	4.5	5.5	6.5	3.5		
CS	CS	IC	IC	IC	-	-	IC		
Medium	Medium	Medium	Medium	Fine	Medium	Coarse	Medium		
Sorted	Unsorted	Unsorted	Sorted	Sorted	Unsorted	Unsorted	Unsorted		
Common	Common	Rich	Common	Rich	Rich	Common	Rich		
Rich	Rich	Rich	Rich	Rich	Rich	Common	Common		
Rare	Common	Common	Rare	Common	Common	Rich	Common		
Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock		
10	22	22	22	13	15	30	30		
3.2	3.8	6.3	4.2	4.2	4.8	6	3.8		
2.9	2.8	3.3	3.2	2.8	3.2	2.4	2.8		
Iron rich clay paste		Iron rich clay paste; Clay pellets							

KL13	KL12	KL11	KL10	KL9	KL8	KL7	KL6	KL5
A9960:82	A9960:78	A9960:81	A9960:30	A9960:76	A9960:56	A9960:78	A9960:60b	A9960:29
Striated	Striated	Striated	Smooth	Striated	Striated	Smooth	Smooth	Textile
1	0.9	0.8	0.7	0.9	1	0.9	1.1	1.2
3	5.5	4	5.5	3.5	5	5.5	3.5	2.5
IC	IC	IC	IC	IC	IC	IC	IC	-
Medium	Medium	Medium	Medium	Fine	Medium	Medium	Coarse	Coarse
Unsorted	Unsorted	Unsorted	Unsorted	Sorted	Unsorted	Sorted	Sorted	Unsorted
Rare	Rare	Common	Rare	Common	Rich	Common	Rich	Common
Rich	Common	Common	Common	Rare	Common	Rich	Rich	Rich
Common	Common	Common	Rare	Rare	Rare	Common	Common	Rich
Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock
13	15	20	30	30	23	30	13	30
4	3.3	3.3	4.6	3.6	5.1	3.6	3.6	4.4
2.4	2.6	2.4	3.4	2.91	3.6	2.6	3.1	3
	Iron rich clay paste		Iron rich clay paste				Iron rich clay paste	Iron rich clay paste



VK4	VK3	VK2	VK1	KL16	KL15	KL14
III/2	III/1	I/1	II/3	A9960:30	A9960	A9960:107
Striated	Striated	Striated	Striated	Smooth	Striated	Smooth
0.92	0.8	1	0.9	1.1	0.85	1.1
2	5	5	5	5	6.5	4.5
IC	IC	IC	IC	IC	IC	S
Medium	Fine	Medium	Fine	Medium	Medium	Medium
Unsorted	Sorted	Unsorted	Sorted	Unsorted	Unsorted	Unsorted
Common	Common	Rare	Rich	Rare	Common	Rare
Rich	Rich	Common	Rich	Common	Common	Rich
Rich	Rare	Rich	Common	Rich	Rare	Common
Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock	Granitic rock
12	6	11	20	13	13	13
3.6	3.6	3.9	3.9	6	2.5	4.4
2.6	2.9	2.5	2.6	3.6	2.2	3.3
Organics?	Iron compound grains					

## VĪNAKALNS

VK10	VK8	VK6	VK5
I/IV profile	II/4	II/2	III/3
Striated coarse-slipped	Textile	Smooth	Smooth
0.9	1.4	1	0.8
4	8	3.5	3
-	-	CS	CS
Coarse	Fine	Coarse	Coarse
Unsorted	Unsorted	Unsorted	Unsorted
Rare	Rich	Rare	Rare
Rare	Common	Rare	Rare
Common	Rare	Rich	Rich
Granitic rock	Granitic rock	Granitic rock	Granitic rock
17	15	7	13
2.7	6	3.9	2.5
2.5	3.2	2.7	2.3

# BALTIC WARE POT LIDS IN LATVIA

ALISE GUNNARSSONE

This article looks at unusually shaped vessels found in the medieval archaeological material of Latvia in the context of similar or analogue vessels of other regions. Although these vessels were made in the tradition of Baltic ware, their shape and construction are noticeably different from the standard Baltic ware so far found in Latvia. The article first contrasts these vessels with the typical Baltic ware pottery found in Latvia to understand their purpose. Secondly, the vessels are compared to their closest analogies in regions that had a strong influence upon Latvia during Late Iron Age and the Middle Ages.

The vessel construction and parallels with finds in other regions indicates that they might have been made as pot lids some time during the Middle Ages. This would be the first time that pot lids have been found and recognised in the archaeological material of Latvia. The rarity of the find suggests interesting outside influences in a period of political change and poses questions towards the relations between foreign and local potters.

*Keywords:* Baltic ware, lids, Slavs, potters, crafts, traveling artisans

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## INTRODUCTION

Traditionally the study of archaeological ceramics deals with large amounts of material out of which one can aim to create a more cohesive theoretical structure of vessel types, shapes, techniques, and chronologies that are easier to operate with in further scientific research. This article is quite different, as it analyses no more than ten potsherds. From these few sherds, I aim to glean information about the potter trade and the relationships of

potters from different cultures with the local peoples of Latvia.

To be able to extrapolate information from such a small material base I need to provide both a detailed context of the find location, how it fits in the general pottery tradition, and a thorough look at the wider context of the Baltic ware type, production, and trade. Here I would ask the reader to forgive the lengthy chapter that introduces the Baltic ware and the regular deviations in later chapters, as they are vital for reaching the conclusion.

The material remains I am analysing is Baltic ware sherds from Indrica manor house, Turaida castle, and Ikšķile settlement (Latvia). The sherds are stored in the collections of Turaida Museum and Latvia National History Museum. Even though Baltic ware is common for Latvia in general and for these sites in particular, the chosen sherds are all atypical by their shape and construction. As the material is fragmented, I have digitally reconstructed them to the closest approximation of their probable shape. As the vessel shapes are so far unknown to Latvia, there is no available local literature for this particular material. However, the local literature on Baltic ware by B. Dumpe and A. Šulte in general provides important local context.

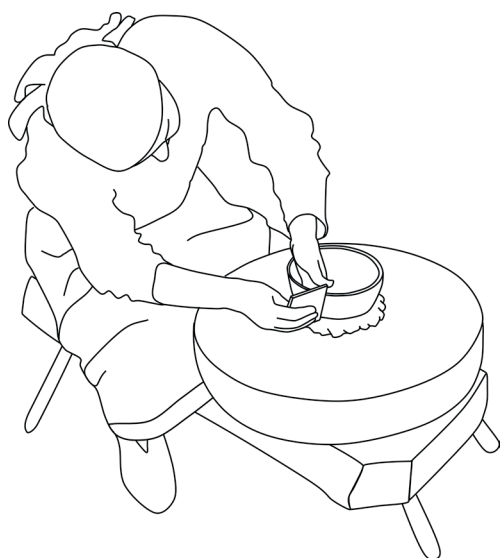
Based on the vessel shapes there are three possible interpretations: bowls, lamps, or lids. To find the correct interpretation the samples are compared with analogues in the regions that have a known impact upon the Latvian material: Germany and Russia. The analogies

allow not only to more clearly see the type of vessel, but also to make assumptions on how this pottery came to be introduced in Latvia and a glimpse into the relationship of local and foreign potters.

## BALTIC WARE AND SLAVIC POTTERY

To begin to understand the analysed potsherds and how they contrast with the typical pottery, one must first look back to the origins of Baltic ware. Baltic ware (*Baltic pottery*) is strongly linked to the Late Slavic pottery and a clear separation is often difficult to establish. To discuss an item of either ware one first needs to clarify the definitions that are used.

Slavic pottery first appeared during the 6th–7th centuries in the Slavic lands on the border to the Byzantium Empire. The production of the pots involved the combination of two different methods of pottery production. The potters first prepared a rough pot using



**Figure 1.** The shaping of a pot on a potter's wheel. Pot attached with clay band. *Drawing by Alise Gunnarssone (Šulte).*

the coiling technique. Then the potter used a potter's wheel for further shaping. The rotation of the potter's wheel was also used to create a wavy line decoration (Fig. 1). As the pots were only partly made using the rotation of the wheel, they cannot be counted as wheel thrown pottery (Bobrinsky 1978, 27).

It has been suggested that the device used was a *turntable* or a *slow turntable* (Roslund 2007, 160, 171), however, this contradicts the research in the Russian-speaking scientific community (Ribakov 1949, 166–167; Bobrinsky 1978, 37–51; Goryunova 2006, 32–34). According to P.M. Rice the basic difference between the technical devices known as a *turntable* and a *potter's wheel* is not the speed of rotation, as both can achieve similar speeds. The difference is in the ability to supply centrifugal force that provides a continuous high-speed rotation (Rice 2005, 132–134). What exactly constitutes a prolonged high-speed rotation or if it is even possible to distinguish the specific technical characteristics of the rotary device just by looking at the finished product should be more thoroughly researched. However, as this pottery continued to be made in Russia and other eastern lands until the 20th century, with the production and the used devices being recorded (Hołubowicz 1950, 57–65, fig. 1–21; Bobrinsky 1978, 26–31), I follow the opinion of the Russian-speaking scientific community and consider that this pottery was made on a potter's wheel.

Both coiled and wheel-shaped pottery were used in all Slavic-speaking lands, hence the name Slavic pottery. However, during the 10th–12th century, with expanding trade and political relations, the pottery spread to the people living along the coast of the Baltic Sea.

Balts, Scandinavians, and to a lesser extent the Estonians, started copying this production method and made pots that combined hand and wheel shaping techniques as well as retained the same visual appearance as Slavic pottery (Cimermane 1962, 96; Liebgott 1978, 14; Tvauri 2005, 31–60; Enqvist 2006, 412; Zariņa 2006, 309; Šulte 2016b, 101–110; Šulte & Gunnarsons 2017, 14). This has led to the term *Baltic ware* or *Ostseeware*. Baltic ware commonly refers to pottery made by different peoples around the Baltic Sea by precisely copying Slavic pottery and producing these ceramics without direct involvement of Slavs (Ludtke & Schietzel 2001, 254–255; Roslund 2007, 264–279).

The visual appearance of Slavic pottery and Baltic ware is very similar and it is only possible to distinguish pots made inside or outside Slavonic-speaking lands by detailed style studies and ceramological analyses. The issue is further complicated by the fact that potters were not always stationary and could travel vast distances (Liebgott 1978, 10). Pottery made outside Slavonic-speaking lands could still have been made by Slavic potters that travelled independently or in a subservient status. Therefore, such pottery could also be called Slavic pottery. Although distinguishing Baltic ware and Late Slavic pottery is difficult, some attempts have been made (Tvauri 2005, 190–194; Roslund 2007). The approach largely depends on the author's confidence in their ability to distinguish imported vessels from vessels made by Slav potters working in foreign lands and the vessels made by local potters learning and adapting this new pottery technology.

The time frame when this pottery was used in Latvia also has strong implications. As in

other coastal areas of the Baltic Sea, this pottery came to Latvia during the 11th century. However, the further development is different. Already in the 12th century it becomes the dominant pottery type, and by the 13th century it is the only pottery used by the local peoples (Šulte & Gunnarsons 2017, 11–20). Similar to other eastern regions, in Latvia this pottery production technique, with small variations in pot shape, continues to be used by local peasants even into the early modern times, possibly up to the Second World War (Dumpe 2011, 285–286). In Latvian language, the term used for the pottery shifts to *svēpētā karamika* when discussed in the context of ethnography. However, the minimal changes in style and technique are not enough to consider it an altogether different type of pottery (Dumpe 2011, 283–286).

It is clear that the dominant ceramics could not have been pure import for hundreds of years. At some point the local potters started making Baltic ware. Purely theoretically, it might have happened at the time when Baltic ware was abandoned in western Europe, here there might have been a shift from the dominance of Slavic pottery to Baltic ware. The shift also might have happened later, or there might have been a continuous interaction between local and Slavic potters. Here we lack research to confirm or deny any of these theories and they all remain valid possibilities for further discussions.

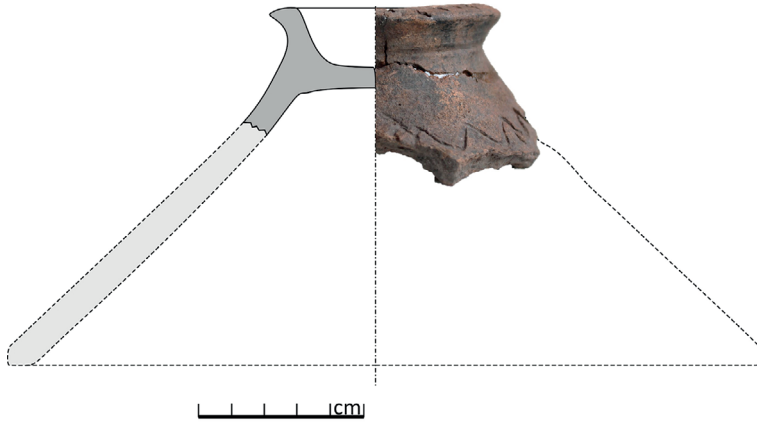
Although the distinction between Baltic ware and Slavic pottery is important, this article does not aim to fully establish a firm separation of Baltic ware and Slavic pottery in Latvia. A precise separation that would cover not only pot lids but all pottery would need its own study and a separate publication. For the

purposes of this article, I will refer to pottery made outside Slavic-speaking lands as Baltic ware regardless of the potter's ethnicity. The origins of the potter will play a role in this discussion only as it is relevant to the discussed subject of pot lids.

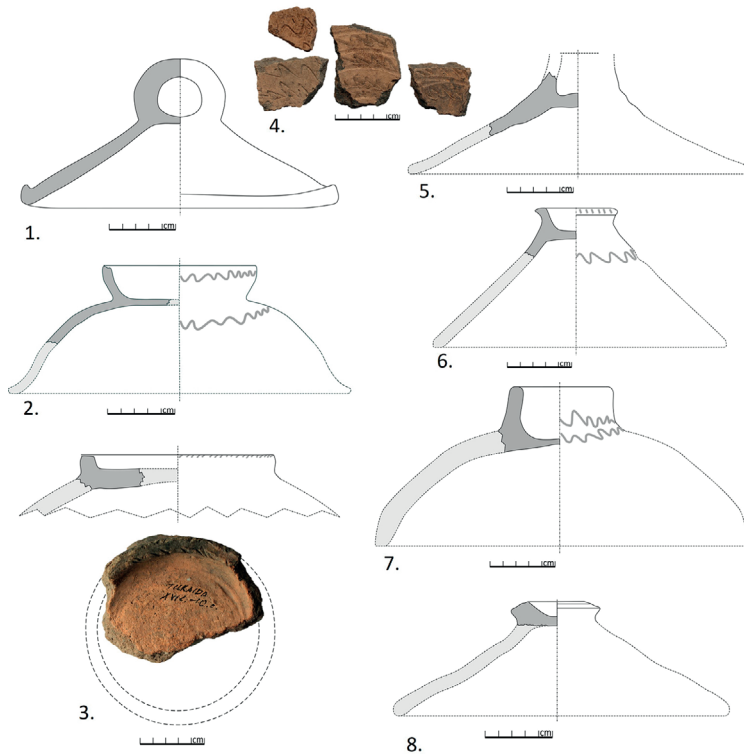
## DESCRIPTION, LOCATION, CHRONOLOGY

Baltic ware was stylistically uniform throughout most of its use in Latvia. It generally consisted of pots of various size with wide, sloping shoulders (Šulte 2016, Fig. 2 and 7). The newly rediscovered vessels were in stark contrast to this uniformity. The sherds appear to have been not from a biconical pot, but from a conical vessel with a clay band that was added on the outside of the apex of the cone and which formed a circular foot or handle, depending on the orientation of the vessel (Fig. 2). Most of the vessels were ornamented similarly to the pots (Fig. 3). The ornamentation consisted of wavy lines around or on the handle and in some cases cuts or a groove along the rim of the handle. Cuts and grooves on the rims can sometimes be observed on the pot rims. Some side sherds appeared to be ornamented with the same wavy lines both on the inside and outside (Fig. 3: 4).

Although most of the discussed vessels followed the same basic construction, they seem to have been quite different to each other; no two vessels were made the same. Even when the clay band was added by the same principles, in each case it was shaped and ornamented differently. The handles were straight, leaning outwards, or curved outwards. The smallest diameter of the handle was roughly 6.5 cm, but the largest was almost 11 cm.



**Figure 2.** Pot lid from Ikšķile settlement (VI 131:813). *Drawing and photography by Alise Gunnarssone (Šulte).*



**Figure 3.** Pot lids: 1. Indrica manor house (VI 256:267); 2–3. Turaida castle (TMR 18993, XVI-10c); 4–8. Ikšķile castle (VI131:1271, VI131:1290, Nr. 813, VI131:1277, VI131:1272). *Drawing and photography by Alise Šulte.*



Most different to the others was a vessel with a ring-shaped handle (Fig. 3: 1) and a vessel with a large button shaped handle (Fig. 3: 8). The noticeable variations suggest that a different crafts person may have produced each vessel.

So far, eight vessels from three sites have been identified: one from Indrica manor house (LNVN, VI 256: 267), two from Turaida castle (TMR, No. 118, plg 8765; No. 4345, 18993) and five from Ikšķile settlement (LNVN, VI 131: 1290; VI 131: 1277; VI 131: 813).<sup>1</sup> Ikšķile settlement also contained several wall sherds from these vessels (Fig. 3: 4), but it is not possible to conclusively say if any are from a separate vessel or from one of the already mentioned. The rarity of these finds is truly striking. For example, Ikšķile settlement material contains 10 523 pieces of pottery out of which 9601 are Baltic ware.

Indrica manor house functioned from the 15th to the 17th century (Zariņa 1996, 13–17). Turaida castle was built on top of the local Liv hillfort during the 13th century and was in use until the 17th century (Jansons 2007, 11, 149). Ikšķile settlement came into existence in the late 11th century and ceased in the 15th century (Graudonis 1991, 73). The settlement's ceramics material was mixed with the ceramics from Ikšķile castle that was built in 1185. Historic sources disagree whether the castle was destroyed at the end of the 15th century or during the Livonian war in the 16th century (Graudonis 1991, 69, 84; Jansons 2004, 42).

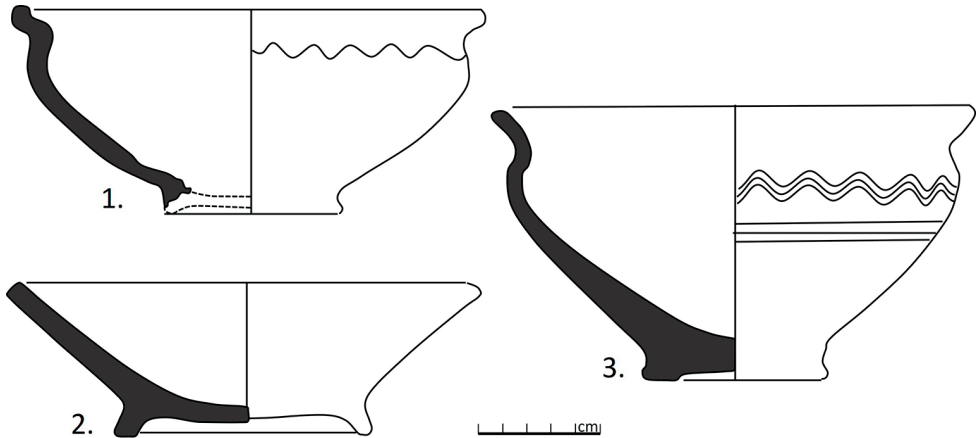
Both Indrica and Turaida are medieval sites with settlements that reach into the Late Iron Age. Although Baltic ware was used in Latvia from the end of 11th century this new type of vessel does not appear in other

Iron Age sites along the Daugava river (Šulte 2016a, 17–25; Šulte & Gunnarsons 2017, 11–20). As these settlements largely cease at the beginning or middle of the 13th century, it is quite clear that the discussed vessel type does not appear earlier than the second half of the 13th century. The sherds from Ikšķile settlement were found in levels covering a period between the end of the 13th century and the beginning of the 15th century. Turaida castle finds have a disturbed context and their dating is difficult. The context of the one find from Indrica manor house was both visually and contextually different from the other vessel finds, suggesting that this might be from a different historic period.

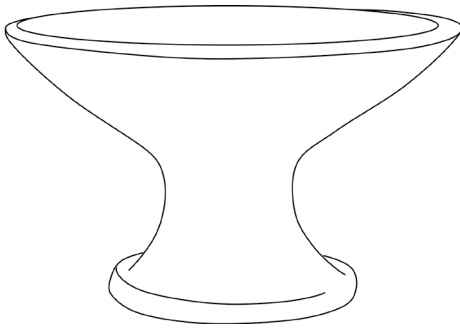
The dating will probably need more clarification and will be re-examined as new material comes in. At the moment, the majority of the finds (except the Indrica manor find that will be discussed separately) fall within the range between late 13th century to early 15th century.

## **BOWLS, LAMPS, OR LIDS?**

Looking at the sherds the first impression is that the sherds belonged to a bowl or a plate. In Latvian Iron Age ceramics material, clay bowls and plates were in the first case uncommon and in the second case non-existent. However, in Estonia and Russia we can find some examples of bowls with a foot (Fig. 4) (Tvauri 2000a, 101; 2000b, 22, 27; 2003, fig. 2; Kildyushevskii 2006, 94–96). Although it is hard to assess the construction of the vessel, the shape appears similar. The placement of the ornamentation was different to what we see in the samples from Latvia. The ornamentation is an important indication of the ves-



**Figure 4.** Bowls: 1–2. Pskov; 3. Viljandi. *Drawing by Alise Gunnarssone after Kildyushevskii 2006, fig. 5.6, 101; Tvauri 2000a, fig. 6.*



**Figure 5.** Oil lamp. *Drawing by Alise Gunnarssone after Wahlöö 1976, fig. 53.*

sel's use and orientation.

The line ornament on the Estonian bowl was placed on the shoulders of the bowl (Fig. 4: 3), as was common for Baltic ware pots. Baltic ware pots were either unornamented or the ornamentation covered the shoulders and the top half of the pot. If the sherds from Latvia were bowls then the least visible parts would be the most ornamented – the base, the foot, and the very bottom of the vessel. In the examples with cuts and grooves on the rims,

the bowl would be standing exactly on the ornament (Fig. 3: 3, 6). This would be in direct contrast not only to the general principles of ornamentation placement of Baltic ware, but also to the examples of Baltic ware bowls from Estonia and Russia.

Another closely similar conical vessel type were the Scandinavian style oil lamps. The shape and ornamentation of oil lamps was analogous to that of lids (Fig. 5). This similarity can lead to misidentification (Wahlöö

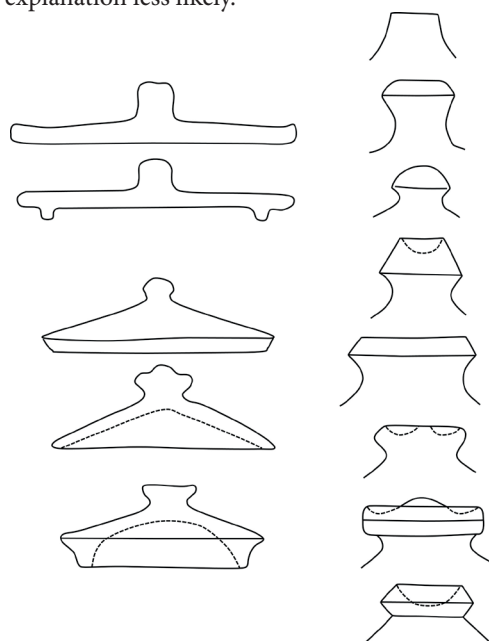
1976, fig. 53–56; Liebgott 1978, 16–18). The predominant difference is the elongated foot of the oil lamps. The foot of the lamps was used to pick them up and move them. This allowed avoiding touching the hot part of the lamp. On the finds of Latvia, the feet were all much shorter, making it impossible to use them as handholds. The short foot would also not provide enough weight to stabilise the vessel, making it easy to turn over. The sherds from Latvia do not display any noticeable signs of oil residue or burn marks which could be linked to a special use. This allows to conclude that the sherds most likely were not oil lamps, and so far no Scandinavian style oil lamps have been found in Latvia.

The sherds from Latvia do not have exact parallels in either bowls or oil lamps. It could be plausible that vessels in Latvia are regional variations of these artefacts, but lack of any direct parallels that could have served as a starting point for such variations makes this explanation less likely.

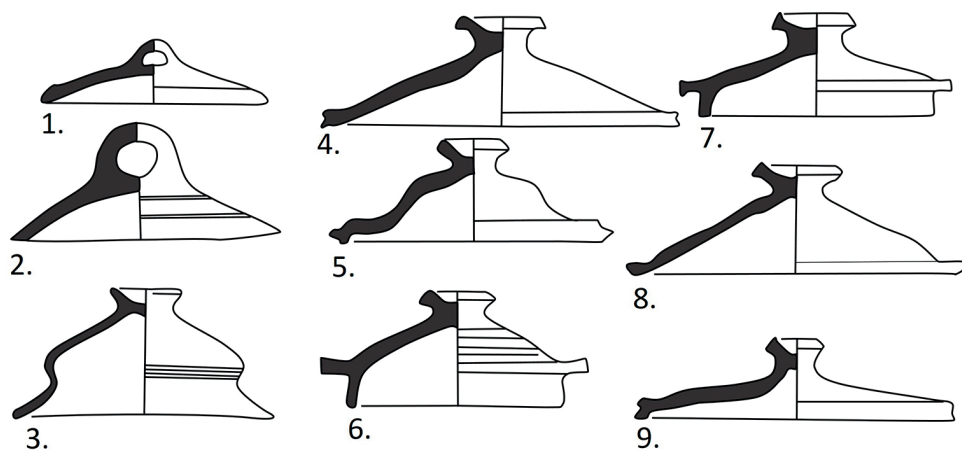
## ORIGINS AND INFLUENCE

The context of the finds in Latvia points to a German influence. Two of the sites were connected to Livonian castles and one was a later manor house. Western connection also seems to be suggested by the time period as lids are not found prior to establishment of Livonia. Generally, the new Livonian citizens came with their own pottery and traditions, and Baltic ware remained the pottery used only by the local population (Dumpe 2016, 75). Although it seems that there was very little interaction between these two pottery traditions during medieval times, it is plausible that lids were an exception.

Although not dominant in the German ceramic material, lids for pots were used during the discussed time period (Mechelk 1967, 42; Gaimster 2006, 102). However, the general shape of lids in Germany was different from those found in Latvia. The handles of the lids were shaped as buttons (Fig. 6; Knorr 1937,



**Figure 6.** Pot lids of Western Slavs. *Drawing by Alise Gunnarssone after Knorr 1937, 58.*



**Figure 7.** Pot lids of Eastern Slavs: 1–2. Moscow; 3. Izborsk; 4–9. Pskov. *Drawing by Alise Gunnarssone after Rosenfeldt 1968, tab. 14; Roslund 2007, fig. 66; Kildyushevskii 2006, fig. 5.5.*

81–83; Freeden & Schnurbein 2002, 356) not as the open circles that are most common in Latvia. The one pot lid in Latvia with a button was also different to the German samples (Fig. 3: 8). The button was much larger and shaped in a distinct way.

Other possible regions of analogous finds during the medieval times could be Denmark and Poland. Clay lids were known and used in these regions, and trade relations existed with Livonia. Both regions also had strong connections to the German and Western Slav pottery traditions. Therefore button handles dominate in lids found in Denmark and Poland (Wahlöo 1976, fig. 58–64; Liebgott 1978, 16; Starski 2016, 189).

Although the dating of German lids seems to coincide with the appearance of lids in Latvia, their shape is quite different. When taking up a new type of vessel, it is typical to start by emulating the original shape and only then create variations. It seems highly unlikely that the local population took the idea of a pot

lid from Germany, Denmark or Poland, but ignored the shape of the handle and instead created a completely new one without a transitional period.

The correlation of lid finds and sites inhabited by Germans might be just a correlation, not a causation. The archaeological excavations of medieval sites are almost always done in or next to a castle or a city. Without material from local settlements that were not located near castles it is impossible to do an apt comparison. The lids might have also been present in local farming settlements that so far have not been excavated.

The other possible direction for parallels for lids is the eastern connection. Expansion of Russian trade and political relations was the source of the appearance of Baltic ware along the Baltic Sea. Baltic ware came to Latvia from the east (Šulte 2016b, 109). In Russia, lids did not contribute a large amount to the total number of ceramics, but they were widespread (Kildyushevskii 2006, 94–95). Clay lids

were used in Russia from the 12th to the 17th century, and in some locations still in the 18th century (Mongait 1955, 117; Rosenfeldt 1968, 9, 79–81; Artemyev 1987, 221; Kildyushevskii 2006, 94–95; Zoč 2010, 363–364; Glazunova 2012, 404; Nefebov & Krenke 2012, 151).

The lids in Russia were more similar to the lids found in Latvia (Fig. 7). Most of the Russian lids had open handles and conical sides. The handle shape was closest to the Ikšķile lid with a large button handle (Fig. 3: 8). The sides were leaning or curving outwards and the rim was sloping outwards. Besides the aforementioned Ikšķile lid the most curvature of sides could be seen in the Turaida lid (Fig. 3: 2). It was more reminiscent of the shape of some lids from Iz-borsk (Fig. 7: 3; Kildyushevskii 2006, 93).

In some later cases, Russian lids were made to be multifunctional and they would be used both as lids and as bowls (Kildyushevskii 2006, 94). This might be applicable to the Turaida pot lid (Fig. 3: 2). The handle was much larger than the other lids and it would have been possible to stably place it as a bowl. However, the ornamentation strongly indicates that even if it was multifunctional the primary placement was as a lid. The ornamentation focuses on the outside of the vessel, on the handle and its surrounding area. A decorative groove was also made on the very edge of the handle.

It is not yet possible to find direct analogies for any of the lids found in Latvia. The variation in the lid shapes and ornamentation suggests different potters. It seems highly likely that the influence and idea of lids came from the Eastern Slavs. However, lack of exact analogies poses the question of whether they were made locally as a variation of Slav ceramics or brought as imports.

## HOW AND BY WHOM?

To understand the way these lids might have come to be in Latvia we must partially return to the discussion about Baltic ware and how this method of ceramic production came to be used by the people around the Baltic sea.

During the medieval times, the local population of Latvia used exclusively Baltic ware for the preparation of food. Such large amounts of pottery could not be solely imported and local pottery production should have shifted over to Baltic ware. Comparing the new lids with the already existing pottery, they bear some similarities. Most noticeably in the decoration. The rims of the lids have notches that are almost identical to the ones found on pots (Fig. 8). The intense decoration of pot rims and shoulders seems to be common for the local pottery. It is likely that the lids were produced locally, not imported. However, where it concerns Baltic ware, produced locally does not always mean produced by locals.

Evidence shows that some Slavic potters were traveling along established trade routes as crafts people. They were setting up kilns near different castles and towns to make and sell their wares. Historical and archaeological sources indicate that the Slavic potters did travel along trade routes similar to traders. Excavation in Viljandi (Estonia) have revealed a 13th century pottery workshop with a kiln. This potter was making pots identical to the ones found in and around Pskov and carried several Russian items, strongly indicating that the potter was of Slav origin (Tvauri 2000b, 22–27; Tvauri 2003, 261). This kiln did not show any pot lid remains, probably because lids were not common in Pskov at the time (Kildyushevskii 2006, 94). Remains



**Figure 8.** Notch decoration on the rim of a pot lid and a pot (VI 131:813, VI 131:1314). *Photo by Alise Gunnarssone (Šulte).*

of 11th–12th century pottery kilns have also been found in Latvia. They appear at the time of Baltic ware's introduction in Latvia. Similarly to the pottery kiln in Viljandi which is located near the castle, these pottery kilns are located at the tops of hillforts (Dumpe 2009, 67–75), indicating a similar relationship to Slav potters.

The variations between the clay lids in Ikšķile suggest different potters. None of the five confirmed lids were exactly the same in shape, ornamentation, or temper (Fig. 3). It seems more likely that different traveling potters would show a greater variation in shape than three local, stationary potters working at the same site.

On the other hand, the lack of direct parallels suggests that the locals might have only taken the idea of lids from the Slav pottery and adapted it. One lid find in Ikšķile (Fig. 3: 8) was visually closer to the Eastern Slav lids.

It is possible that this was an original import, and the other lids were a local Baltic ware imitation of this shape. However, the question whether the lids were produced by locals trying out the new pottery type or by traveling Slav potters trying to introduce a new type of ware remains open.

### QUESTION OF INDRICA

As mentioned at the start of the article, the pot lid from Indrica seems to be related to a different context than the others and should be discussed separately. The sample from Indrica manor house seems to fall in the same historical context as a pot lid find from Estonia. During the Livonian war in the 16th century, Muscovite forces managed to occupy many castles. These castles functioned as waypoints for soldiers from Russia. The Muscovite presence in the castles left a mark

also in the ceramic material. The Muscovite soldiers brought with them many glazed and unglazed vessels and later disposed of them on the castle grounds. Among these household items in Estonian castles was also a pot lid (Tvauri 2004, 419).

During the Livonian war, the Muscovite forces captured the Indrica manor house. The ceramic material indicates that during this time the manor house had a strong Muscovite presence. We can find Russian style pottery, for example a green glazed greyware flask (LNVM, VI 256: 277). Out of the mentioned sites containing lids, Indrica was the only site with strong indications of Muscovite presence. Indrica was also the only site where the pot lid had a ring-shaped handle. The closest parallels to this shape are in Moscow (Rosenfeldt 1968, 81), connecting it in time, context, and visual appearance to the Muscovite forces of the 16th century.

Hence, this find came to Latvia through military activity during the early modern period. The Muscovite soldiers did not reach Turaida castle, and Ikšķile castle was already in ruins. The pot lid of Indrica is not a continuation of the finds from Ikšķile and Turaida and is not directly connected to the previously discussed pot lids. As such finds may lead the author and the reader to false conclusions, it was important to include it in the analyses, if only to clearly separate it from the other material.

## CONCLUSION

The potsherd analysis allows to conclude that these vessels were made as pottery lids. Some of them may have been multipurpose vessels that, depending on the situation, were

used both as bowls and as lids. However, the placement of ornamentation together with the basic construction indicated lid as the main purpose. Based on find locations and without further chronological analysis they can be dated between the end of the 13th and the early 15th century. With more finds or more exact analyses, this dating is expected to be adjusted. Later lids seem to be imported goods with a different historical context.

As the Baltic ware from these and similar sites includes only a few samples of lids, it is clear that pottery lids were not common or widely used. Looking at analogue pot lids from different regions it seems highly likely that the appearance of pottery lids was due to the continuation of craft and trade relations with the east. This shows that the long-standing eastern relation with local peoples did not fully stop with the founding of Livonia and the intensification of western relations.

Although the original idea of this vessel type was introduced from the east, it is difficult to say if the potters who made them were local or Slavic crafts people. As no exact analogue pot lids have been found in other regions, it seems more likely that they were produced locally. However, the high variety of shapes indicates many different potters. Whether these were local or visiting potters is still left for further research.

The travel of crafts skills and crafts people along the river Daugava during the medieval times shows how the previous trade and crafts relations did not disappear with the establishment of Livonia. Still for some time after the establishment of Livonia the eastern relations continued to be important not only to the traders but also to the crafts people and the local population.



## REFERENCES

- Artemyev, A.R. 1987 = Артемьев, А.Р. 1987. Древнерусский поруб в Изборске. Советская Археология, 3, 219–222.
- Bobrinsky, A.A. 1978 = Бобринский, А.А. 1978. Гончарство Восточной Европы. Издательство 'Наука', Москва.
- Cimernane, I. 1962. Zimes uz XI–XIII gs. māla traukiem Latvijas PSR teritorijā. In *Latvijas PSR Vēstures Muzeja raksti. Arheoloģija*. Red. L. Vankina. Latvijas PSR Vēstures Muzejs. Rīga, 59–105.
- Dumpe, B. 2009. Senākās podniecības krāsnis Latvijā. In *Pa somugru pēdām Baltijas jūras krastā: starptautiskās zinātniskās konferences materiāli*, 2009. gada 23. aprīlis, Turaida. Red. R. Kļaviņa Zinātne, Rīga, 67–75.
- Dumpe, B. 2011. Svēpētās keramikas izcelsme Latvijas podniecībā. *Arheoloģija un etnogrāfija* 25. Red. V. Bebere, V. Bērziņš, G. Gerhards u.c. LAID, Rīga, 283–293.
- Dumpe, B. 2016. Podniecība un Sadzīve. In *Ceļā uz Latviešu Tautu*. Red. V. Muižnieks. Latvijas Nacionālais vēstures muzejs, Rīga, 55–184.
- Enqvist, J. 2006. Karelian Ware: pottery of Slavonic type in eastern Finland. *People, Material Culture and Environment in the North. Proceedings of the 22nd Nordic Archaeological Conference, University of Oulu, 18–23 August 2004*. Ed. V.-P. Herva. *Studia humaniora ouluensia* 1. Faculty of Humanities at the University of Oulu, Oulu, 412–419.
- Freeden, U. & Schnurbein, S. (eds) 2002. *Spuren der Jahrtausende. Archäologie und Geschichte in Deutschland. Römisch-Germanische Kommission*. Theiss, Stuttgart.
- Gaimster, D.R.M. 2006. *The Historical Archaeology of Pottery Supply and Demand in the Lower Rhine-land AD 1400–1800. An Archaeological Study of Ceramic Production, Distribution and Use in the City of Duisburg and Its Hinterland*. Studies in Contemporary and Historical Archaeology 1. BAR Publishing, Oxford.
- Glazunova, O.N. 2012 = Глазунова, О.Н. 2012. Особенности керамического производства Ново-Иерусалимского монастыря в XVII–XVIII веках. In *Археология Подмосковья. Материалы научного семинара 8*. Red. А.В. Энговатова и В.Ю. Коваль и И.Н. Кузина. ИА РАН, Москва, 396–405.
- Goryunova, V.M. 2006. Early Wheel-Turned Pottery from Ryurik Gorodishche (10th Century) and Certain Questions Connected with its Synchronisation with the Pottery of Novgorod and Staraya Ladoga. In *The Pottery from Medieval Novgorod and its Region*. Ed. Clive Orton. UCL Press, New York, 31–52.
- Graudonis, J. 1991. *Ieskats Ikšķiles vēsturē. Daugavas raksti: no Aizkraukles līdz Rīgai*. Zinātne, Rīga.
- Hołubowicz, W. 1950. *Garncarstwo Wiejskie Zachodnich Terenów Białorusi*. Nakładem towarzystwa Naukowego W Toruniu, Toruń.
- Jansons, G. 2004. *Ikšķiles viduslaiku baznīca un pils: Pētījums arhitektūras vēsturē*. Latvijas vēstures institūta apgāds, Rīga.
- Jansons, G. 2007. *Turaidas pils arhitektūra 13.–17. gadsimts*. Latvijas vēstures institūta apgāds, Rīga.
- Kildyushevskii, V. 2006. Pskov pottery in the 12th to 16th centuries. *The Pottery from Medieval Novgorod and its Region*. Ed. C. Orton. UCL Press, London, 79–116.
- Knorr, H.A. 1937. Die slawische Keramik zwischen Elbe und Oder. Einteilung und Zeitansetzung auf Grund der Münzgefäße. Mit einem kurzen Abriß der früh- mittelalterlichen Keramik. Band 5. Curt Rabijsch Verlag. Leipzig.
- Liebgt, N.-K. 1978. *Keramik Fra Vikingetid og Middealder*. Nationalmuseet, København.
- Ludtke, H. & Schietzel, K. 2001. *Handbuch zur mittelalterlichen Keramik in Nordeuropa. Band 1: Text*. Wachholtz Verlag, Neumünster.
- Mechelk, H.W. 1967. *Mittelalterliche Keramik aus dem Stadtkern Dresden*. Veb Deutscher Verlag Der Wissenschaften, Berlin.
- Mongait, A.L. 1955. Старая Рязань. Материалы и исследования по археологии СССР 49. Издательство Академии Наук СССР, Москва.
- Nefebov, V.S. & Krenke, N.A. 2012 = Нефёбов, В.С. и Кренке, Н.А. 2012. Древнерусское селище Царицыно 2. Археология Подмосковья. Материалы научного семинара 8. Eds. А.В. Энговатова и В.Ю. Коваль и И.Н. Кузина. ИА РАН, Москва. 137–154.
- Ribakov, B.A. 1949 = Рыбаков, Б.А. 1949. Ремесло древней Руси. Академии наук СССР, Москва.
- Rice, P.M. 2005. *Pottery Analysis*. The University of Chicago Press, Chicago.
- Rosenfeldt, R.L. 1968 = Розенфельдт, Р.Л. 1968. Московское керамическое производство XII–XIII вв. Археология СССР. Свод археологических источников, E1–39. Издательство "Наука", Москва.
- Roslund, M. 2007. *Guests in the House. Cultural Transmission between Slavs and Scandinavians 900 to 1300 A.D.* BRILL, Leiden.
- Starski, M. 2016. Późnośredniowieczne wyroby garncarskie z Pucka. *Studium małomiasteczkowej wytwórczości garncarskiej na Pomorzu Gdańskim*. Instytut Archeologii UW, Warszawa.
- Šulte, A. & Gunnarsons, D.S.E. 2017. Ieskats Salaspils Laukskolas apmetnes un kapulauka keramikas telpiskajā analizē. In *Latvijas Nacionālā vēstures muzeja zinātniskie lasījumi 2014.–2016. Latvijas Nacionālā vēstures muzeja raksti NR. 23*. Red. I. Antēna. Jelgavas tipogrāfija, Jelgava, 11–20.
- Šulte, A. 2016a. Trauku zīmju izplatība Latvijā un tās iespējamie skaidrojumi. *Jauno vēsturnieku zinātniskie lasījumi I*. Red. V. Bebre. Valmieras Pilsētas Pašvaldības Valmieras Muzejs, Latvijas Universitātes Latvijas Vēstures Institūts, Rīga, 17–25.
- Šulte, A. 2016b. Agrās ripas keramikas izgatavošanas sākums Latvijas teritorijā (11.–13.gs.). In *Lietišķi*

- ģeoloģiskie pētījumi jaunas tehnoloģijas, materiāli un produkti*. Red. V. Segliņš. ResProd, Rīga, 101–111.
- Tvauri, A.** 2000a. Loo-de-Vene päritolu slaavi keraamika Eestis 11.–16. sajandil. *Eesti Arheoloogia Ajakiri*, 4 (2), 91–119.
- Tvauri, A.** 2000b. Pihkva Pottsepad Viljandis Ja Tartus 13. Sajandil. *Eesti Arheoloogia Ajakiri*, 4 (1), 21–30.
- Tvauri, A.** 2003 = Тваури А. 2003. Псковские гончары в Тарту и Вильянди в XIII в. Археология и история Пскова и Псковской земли. Материалы научных семинаров за 2001–2002 гг. Отв. ред. В. В. Седов. Российская Академия наук, Псков, 257–261.
- Tvauri, A.** 2004. Liivi sõja aegne Vene keraamika Eesti linnustes ja linnades. In *Linnusest ja linnas. Uurimusi Vilma Trummali auks. Muinasaja Teadus* 14. Ed. V. Lang. Tartu Ülikool, Tallinn and Tartu, 395–419.
- Tvauri, A.** 2005. *Eesti hilisrauaaja savinõud (11. sajandist 13. sajandi keskpaigani)*. Muinasaja teadus, 16. Kleio, Tartu and Tallinn.
- Wahlöö, C.** 1976. *Keramik 1000–1600 i svenska fynd*. Archaeologica Lundensia, 6, Kulturhistoriska Museet, Lund.
- Zariņa, A.** 1996. Indricas senvietas. Daugavas raksti: no Koškovciem līdz Daugavpili, 3. sējums. Red. V. Villeruša. Rota, Rīga, 7–19.
- Zariņa, A.** 2006. *Salaspils Laukskolas kapulauks 10.–13. gadsimts*. Latvijas vēstures institūta apgāds, Rīga.
- Zoč, S.A.** 2010 = Зоч, С.А. 2010. Позднесредневековая керамика из города Владимира (по материалам раскопок 2006 года). In Археология Подмосквья. Материалы научного семинара 6. Eds. А.В. Энговатова и В.Ю. Коваль и И.Н. Кузина. ИА РАН, Москва, 361–370.

## NOTE

- References indicate a specific artefact in an archaeological collection. The first group of letters indicates a museum establishment (LNVM = National History museum of Latvia; TMR = Turaida Museum Reserve). The roman numerals with numbers after LNVM indicate a specific collection (VI 256 = Indrica manor house) and an artefact in this collection (267). The group of letters and numbers after TMR indicate the artefact in two parallel ID systems (No. 118, plg 8765).

# FUNCTION FOLLOWS FORM? THE ROLE OF ANALOGIES IN DISCOVERING THE STONE AGE

LIISA KUNNAS-PUSA

In 1723, Antoine de Jussieu presented his research to the French Academy of Sciences. He demonstrated how stone tools used by Caribbean and Canadian native populations uncannily resembled European ‘thunderbolts’, as Stone Age stone artefacts were known. Since the latter had similar appearance as the former, their origin and function must also be similar. Expanding the analogy, it could be presumed that European people had once been culturally similar to the native peoples of America. Although the archaeological and chronological concept of the Stone Age did not form until later, it already existed as a philosophical concept in relative chronology. Ideas of stone being used as raw material before metals, and the division of the past into successive technological epochs were discussed in the Antiquity, as well as during the subsequent centuries. However, ethnographic and technological analogies were essential in connecting the philosophical theory with the material record of the past. The analogy between Stone Age and the contemporary native populations expanded from technology to culture, having a lasting impact on the way Stone Age is perceived.

*Keywords:* Stone Age, analogy, Native Americans, conceptual history, history of archaeology

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## Introduction

‘Form follows function’ is the famous guideline of functionalist architecture, attributed to architect Louis H. Sullivan. He stated that everything is formed according to its function:

“[O]ver all the coursing sun, form ever follows function, and this is the law. Where function does not change, form

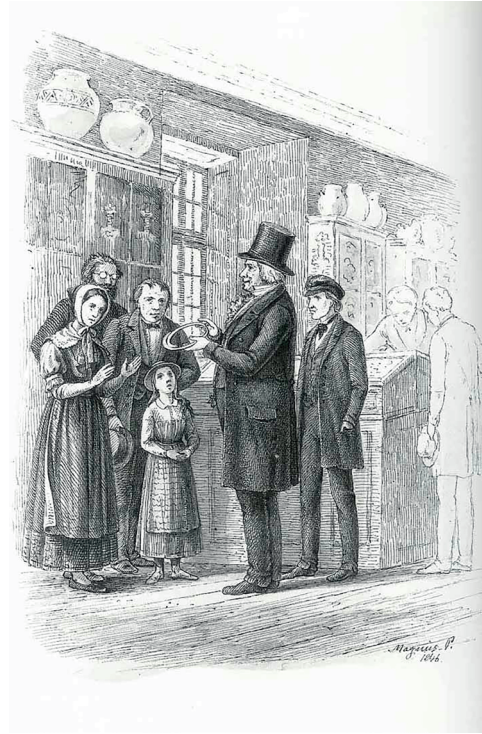
does not change. The granite rocks, the ever-brooding hills, remain for ages; the lightning lives, comes into shape, and dies, in a twinkling.” (Sullivan 1896, 408<sup>1</sup>)

In the title of this paper the statement is reversed: in the archaeological recognition of thunderbolts as artefacts, their original functions as arrowheads and axes were inferred

from their form, and the function only caught up with the form through the application of analogies.

Most presentations of archaeological research history, especially the ones concerning Stone Age archaeology, begin from the 19<sup>th</sup> century. Undoubtedly, the concepts of *pre-history*, *Stone Age*, and *archaeology* only take their modern form during the 19<sup>th</sup> century and are still forming in the beginning of the 20<sup>th</sup> century. People had always found Stone Age stone artefacts by accident, and different explanations about their origin were fabricated. Called for example ‘thunderstones’, ‘thunderbolts’ or ‘ceraunites’ (in Latin *ceraunia*), they were most commonly associated with thunder, thought to be tips of lightning, and were often re-used as magical objects (e.g. Blinkenberg 1911; Goodrum 2002; 2008; Muhonen 2006; Johanson 2009; Kunnas-Pusa 2016). Some objects labelled into this same category were actually fossils or natural stones of interesting shapes. The true depth of the human past was only discovered in the mid-19<sup>th</sup> century, when scientific progress in the fields of geology and natural sciences brought forth the new, much longer chronology for the Earth. Even after that it still took time for the idea to become accepted in the mainstream of science, not to mention in public opinion.

However, the ‘time revolution’ only helped to add the final touch to the concepts of Stone Age and the three-age system by bringing forth their chronological component. In the background, there was already a long history of slow recognition when Christian Jürgensen Thomsen published *Ledetraad til Nordisk Oldkyndighed* in 1836. Thomsen described the archaeological collections of the Nation-



**Figure 1.** C.J. Thomsen showing visitors around the Danish National Museum. Contemporary drawing by P. Marquardt (1848). *Wikimedia Commons*.

al Museum of Denmark (then Danish Royal Commission for the Collection and Preservation of Antiquities), which had been organised according to Stone Age, Bronze age and Iron Age sections since 1819 (Fig. 1; Trigger 2006, 122–124, 127). Thomsen was undoubtedly familiar with previous studies presenting the idea of sequencing the human past into successive periods based on the prevalent technology. According to Peter Rowley-Conwy, Thomsen himself described the three-age system as “an old idea” in a letter in 1825 (Rowley-Conwy 2007, 38, appendix 2). Several works mentioning the idea were already

published in Denmark during the early 19<sup>th</sup> century, preceding Thomsen, for example by S. Thorlacius in 1802 and L.S. Vedel-Simonsen 1813 (Daniel 1967, 90–91; Clarke 1968/2008, 54; Rowley-Conwy 2007, 38), and later, others developed the idea further, for example J.J.A. Worsaae, C. Molbech, and S. Nilsson (Rowley-Conwy 2007, 42–47, for an overview on the history of Scandinavian archaeology, see e.g. Klindt-Jensen 1975; Baudou 2004).

So, Thomsen did not invent the three-age system, but he was perhaps the first to understand how the concept can be connected to absolute chronology and how the typological changes observable in sequenced archaeological material can be used for dating. Initially, Thomsen was still trying to fit the three-age system into the timeframe advocated by, for example, the Danish historian Peter Frederik Suhm (e.g. Suhm 1769; 1770; 1802), combining biblical and linguistic history with Nordic mythology. However, in its published form, Thomsen's idea was largely dissociated from Suhm's chronology (Rowley-Conwy 2007, 26–29, 39–40, 47). Besides stone, bronze, and iron, Thomsen also noted how other materials and certain items appeared in the same context. Thomsen associated amber with Stone Age, gold starting to appear during the Bronze Age, and silver and glass with the Iron Age, and he also aimed to connect certain types of pottery or burial customs with a certain phase of chronology (Gräslund 1987; Rowley-Conwy 2007, 38).

Some historians of archaeology have emphasized Thomsen's work as a radical and fresh idea while disregarding the meaning of the long history behind the idea (e.g. Daniel 1967, 90)<sup>2</sup>. Clearly, Thomsen had been influenced by earlier studies since, in its pro-

to-form, the idea of the three-age system was already discussed during the Antiquity, and it had subsequently been bubbling under the surface of European historical thought. Thomsen just happened to exist in an ideal time and place to wrap up the condensed information gathered and refined during the previous centuries.

The emergence and the development of the concepts of the three-age system and Stone Age can be approached through the method of conceptual history. In conceptual history, concepts including their meaning, etymology, and semantics are viewed as layered things, with their accumulated historical background contributing to the concept and its meaning, terminology, and symbolic and visual representations (e.g. Bödeker 1998, 51–55; Ball 1998, 76–77; Hyvärinen *et al.* 2003, 11; Nivala & Rantala 2012, 224–225; see also Koselleck 1998; 2004). Conceptual history studies the changing content of concepts and the change and continuity observed in their usage. For example, the concepts of Stone Age and prehistory carry connotations, meanings, and symbolism accumulated through different ages and cultural traditions, starting with the texts of classical philosophers.

This paper focuses on the 18<sup>th</sup> century discussion about the analogies between European Stone Age artefacts, known as thunderbolts, and the contemporary stone tools used by Native Americans. The paper aims to examine the pivotal importance of analogies in the formation of the modern concept of Stone Age. The recognition of stone tools as man-made objects and the formation of the three-age system were slow and winding processes, the ideas popping up now and then already centuries before Thomsen or the 19<sup>th</sup> century

discovery of the 'deep time'. The emergence and development of an idea or concept often follows an uneven and at times chaotic path where coincidence and simultaneous chains of events attribute to its evolution. Schnapp describes the history of archaeological thought as "an account of a sea troubled by violent waves, which cast up shells on the shore that are then washed away by other waves" (Schnapp 1996, 35–36). During the 18<sup>th</sup> century, several chains of events that had been in motion reached a tipping point where they enabled the ideas related to stone artefacts and prehistory to gain momentum and flesh out from being only so-called weak signals (see also Goodrum 2002).

The first chapter of this paper will briefly examine the background of historical thought in the cultures of Classical Greece and Rome where the ideas of prehistory and the three-age system first surfaced. Subsided, then, for a short time, the ideas started to reappear boosted by the Renaissance and the European discovery of the American continent. The second and third chapters will explore the new dimensions attached to these ideas and the merging between the concept of prehistory and the cultures of the 'savages'. The use of stone instead of metals observed among the native populations of America, combined with textual sources proposing the idea of the three-age system, enabled the ethnographic and technological analogies explaining the past of European people and eventually expanded to cultural analogies.

## **THE THREE-AGE SYSTEM AS A PHILOSOPHICAL CONCEPT IN CLASSICAL ANTIQUITY**

Ancient Greek and Roman scholars speculated on the origin of humanity and wondered what the earliest phases had been like. For example, Greek historian Diodorus Siculus aimed to write down the entire world history in his *Bibliotheca historica* during the 1st century BC. In his opinion, the first humans had lived a life of continuous struggle for survival at the mercy of nature, until social and cultural evolution was enabled after first securing the basic needs by seeking shelter in caves and discovering the use of fire (Schnapp 1996, 70–71).

In *De rerum natura* by the Roman poet Lucretius (cited in Schnapp 1996, 332), a work almost contemporary with Siculus, the early days of mankind are described in a similar way. At first, humans are surviving like animals with only their teeth and nails as weapons, and then learning how to make tools out of stone and wood, and, eventually, of bronze and iron.

In ancient Greece and Rome, the fact that bronze was used before iron was common knowledge evidenced by both oral tradition and written sources, as well as material remains (Schnapp 1996, 46; Trigger 2006, 45). The idea of stone being used as a raw material before metals was just the next step in this train of thought, and this is made clear, for example, in Lucretius's text. However, actual stone artefacts found from the ground were apparently not connected to these ideas, but were instead held either as magical objects associated with gods of thunder like Zeus and Jupiter, or as natural curiosities, and, for example, Pliny assumes they were somehow



formed during thunderstorms (Blinkenberg 1911, 15–17, 29–31).

Both Diodorus Siculus and Lucretius held a progressive view on the human history. Cultural and social evolution had come a long way since the early days of struggling and battling the forces of nature, and the development of society was tied to technological progress. In the Antiquity, there existed also an opposite narrative to this: the degenerationist view found, for example, in Hesiod's *Works and Days*. In this narrative, the beginning of mankind was the Golden Age and the subsequent epochs saw a gradual worsening of human life (see Sihvola 1987, 26–29, 30, 45). This type of myth was common in Eastern philosophy and influenced also the biblical narrative of Adam and Eve's expulsion from the Garden of Eden (e.g. Trigger 2006, 45–46).

In Classical texts the concepts of the three-age system and a distant past resembling prehistory only existed as philosophical or theoretical concepts dividing the human past into successive stages based on technology. These concepts did not have the chronological dimension that our modern concepts of prehistory and Stone Age have, and they were not as 'real' as Stone Age is to us. In the historiographical tradition of the Classical Antiquity, the distant past with stone tools existed in the same semi-mythological past in which the gods, ancient heroes, and mythological creatures were present. The philosophers and historians of the antique world did not possess the necessary knowledge to understand the age of the world or the true chronological length of human existence. In contrast to modern scientific thinking, they were also content with their world having a certain vagueness to it.

Despite the differences between the Classical and the modern concepts of history and the past, there was some understanding of the fact that a long time had passed since the earliest days of mankind. The world of Antique Greece and Rome was surrounded by the material and textual remains of ancient cultures making it clear that there was already a long history preceding their own time (Schnapp 1996, 71–73, 224). The traditions of *Iliad* and *Odysseia* depicting the Trojan War fought with bronze weapons was almost on the verge of the mythological past. Ancient ruins also fascinated Greek and Roman scholars (Schnapp 1996, 46). The pyramids of Egypt were already millennia old and represented similar ancient and mystical culture, as they do in modern times, even though not even the Egyptian chronology was unmeasurably long since it was tied to the written chronicles of the pharaohs. Still, the idea of a deep past reaching beyond memory was possible unlike during subsequent centuries which relied on the biblical chronology.

The Christian concept of time and history based on the Bible has sometimes been referred to as 'flat time' or 'closed time' (e.g. Olivier 2013, 171). In the Christian tradition, the past was built on and anchored to a textual tradition. The whole world history was thought to be recorded in the Bible and the works of Classical writers. In the 17<sup>th</sup> century James Ussher, among others, calculated that the world was created on the 23<sup>th</sup> of October 4004 BC, but already before that the Creation was thought to have occurred at some point between 5000 to 3000 BC (e.g. Daniel 1962, 11). The human history was also thought to be drawing near its end since the end of days, as described in the Bible, were also assumed



to be in the near future (Trigger 2006, 48–52). However, the idea of a much longer past than the one depicted in the Bible was all along present and discussed, for example, in Arabic and cabbalistic traditions (Schnapp 1996, 224–225).

The human history anchored to the textual sources of the Bible and the writers of ancient Greece and Rome was a plausible concept only insofar as the past of the Mediterranean area was considered. In the outer reaches of Europe, the rim of the safe, text-based history came closer, and more past was left to the realm of the vague and foggy time beyond the texts (see e.g. Daniel 1962, 11–14). The European discovery of distant lands, cultures, and peoples not mentioned in this textual tradition at all posed new questions and started the process of making the true understanding of the human past possible.

### **MICHELE MERCATI AND THE THUNDERBOLTS: REACHING FOR A BRIDGE BETWEEN MATERIAL REMAINS AND A TEXTUALLY-BUILT PAST**

The discussion about the true nature of the thunderbolts as man-made objects intensified in the beginning of the 18<sup>th</sup> century. Already before that, many scholars had tried to explain them as natural curiosities, following the same tradition as in Pliny's texts. During the 16<sup>th</sup> and 17<sup>th</sup> centuries, a widely held thought was that these objects were formed in the clouds by condensation of substances, and that they then fell down during thunderstorms. There were even several eyewitness accounts, for example, in 16<sup>th</sup> century Germany of people claiming to have seen these objects fall during a storm

(probably based on meteorite sightings). Therefore, thunderbolts were affiliated with natural phenomena such as fossils or meteorites, and they were also mostly researched by naturalists or geologists (Goodrum 2002, 258). Several scholars, for example Anselm Boethius de Booth, proposed in the early 1600's, that the shape of some thunderbolts was too similar to modern axes and tools to be of natural origin, especially when some axes had a shaft hole in them. However, the theory did not really progress from this point onwards. Since axes were, and always had been, made of iron, the only explanation for thunderstones to be manmade tools was that they had somehow transformed from metal to stone (Goodrum 2008, 482–483, 489–490; see also Hamy 1906, 242).

Michele Mercati (1541–1593) was a physician who was interested in natural history and all sorts of curiosities. He worked as a doctor for Pope Clement VII, but also managed the Vatican Botanical Garden and looked after the collections of Vatican, which included *ceraunia*. Mercati divided the objects into *ceraunia cuneata*, wedge-shaped thunderbolts (actually Neolithic stone axes) and to *ceraunia vulgaris*. He still proposed some meteorological explanation for the former but stated that the latter were ancient arrowheads and spearheads from a time before iron (Mercati 1719, 241–243; Schnapp 1996, 151–152). Mercati also noted that usually the stone chosen as the material for these objects was hard and durable yet easily moulded by chipping, like flint (Hamy 1906, 242–243).

Sometimes the significance of stone artefacts brought from the New World has been emphasized when concerning Mercati (e.g. Goodrum 2002, 258), but ethnographic comparisons were clearly far less important to

him than analogies formed between textual sources and the artefacts. Mercati was very likely familiar with the Classical concept of the three-age system, and he cites passages from the Bible mentioning stone tools, ancient Greek and Roman texts describing peoples and tribes that fought with stone-tipped weapons, as well as Lucretius's assessment of the early days of mankind. The Bible states that knives made of flint were used for circumcision (Hamy 1906, 242–243; Schnapp 1996, 347).

More than aiming to point out the analogy between American stone tools<sup>3</sup>, Mercati wanted to show how the utilisation of stone artefacts in the European past fits in with the textual grid of the human past:

“Ceraunite’ has the same shape as these [javelin-points described by Romans], hence the opinion, according to which the ancients, before the working of iron, cut sicilices [arrow- and spearheads] from flint and that ‘ceraunite’ comes from this.” (Mercati 1719, 243; translation in Schnapp 1996, 347)

The evidence obtained from written sources was extremely important in backing up Mercati's observations. The textually-built past based on Classic writers and the Bible was the overall framework that held the worldview and history of mankind together. Physical artefacts were not considered as reliable witnesses to the past in the way written sources were. However, with a straight analogy to an object described in a text, the credibility of an object was increased. Maybe even more importantly, the stone knives in the Old Testament helped to prove that there

was not necessarily a contradiction between the concept of the three-age system and the biblical timeframe. The same Bible passages that mention the use of stone knives are cited very often during the next centuries after Mercati in relation to stone tools (also in Finnish sources, e.g. Gadd/Ramstadius 1776, 10). This highlights the need to connect the explanation for thunderbolts to the familiar past reachable through textual tradition.

Edited by physician Giovanni Maria Lancisi, Mercati's book *Metallotheca Vaticana* was published over a century after his death in 1717–1719, and only four years before Antoine de Jussieu presented his observations. During the 17<sup>th</sup> century, there were several other scholars, for instance Edward Lhwyd, Robert Plot, Thomas Hearne, Ralph Thoresby, William Dugdale, and John Woodward, who made a similar connection between the so-called thunderbolts and American stone tools, and who combined that with textual evidence.

Ulisse Aldrovandi's ideas about the ceraunia being ancient tools were formulated during the same time as Mercati's, and published in 1648 (Trigger 2006, 93). In France, the discovery and excavation of a megalithic tomb in Cocherel in 1685 led Bernard de Montfaucon to publish his research including the stone, bone, and horn artefacts found in the tomb<sup>4</sup> (Goodrum 2002, 259–261; Trigger 2006, 93–96; c.f. Hamy 1906, 244; Stiebing 1995, 30; Schnapp 1996, 235–237). Montfaucon was, like Mercati, more inclined to point out the traces of stone tools in textual material and connect those with the material evidence provided by actual artefacts. It is likely that most of these scholars and historians reached the same conclusions as Mercati individual-

ly without being acquainted with his manuscript, which again serves as an example of the way ideas can ‘float in the air’ for a long time before their breakthrough.

An increasing amount of ethnographic material was collected from the American continent during the 17<sup>th</sup> and 18<sup>th</sup> centuries, and illustrations depicting the life and customs of Native Americans became widespread in Europe (Fig. 2). The contact made with these cultures, and the peoples of the Far East and the Pacific started a chain reaction in the scientific thinking in Europe (see also Clark 1992, 24–26). The discovery of the tremendous diversity in nature, as well as within mankind contributed to the broadening worldview of the Enlightenment.

### **ALL THE WORLD WAS AMERICA – ETHNOGRAPHIC AND TECHNOLOGICAL ANALOGIES EXPAND TO CULTURAL COMPARISON<sup>5</sup>**

Antoine de Jussieu presented his study *De l’Origine et des usages de la Pierre de Foudre* about the origin of European thunderstones to the l’Académie Royale des Sciences in 1723. De Jussieu aimed to elaborate the earlier hypotheses by Mercati and others by emphasising the ethnographic comparisons. His analogy was based on more detailed comparisons between the shape of and use-wear found on American stone tools and thunderbolts. Based on this evidence, he concluded that if they were similar in appearance, they therefore



**Figure 2.** Sometimes the illustrations depicting the Native Americans could be quite extreme in highlighting the ‘Otherness’ or ‘savageness’ of these cultures, like this vivid depiction of cannibalism, originally published in the semi-fictionous *Nova Typis Transacta Navigatio* by Caspar Plautius in 1621. These aspects and ‘the strangeness of the past’ are also sometimes emphasized in relation to Stone Age (e.g. The Guardian 16.2.2011). *Wikimedia Commons*.

must have once been used in similar fashion (de Jussieu 1730; Hamy 1906, 246; Schnapp 1996, 267). Schnapp points out how, in doing so, de Jussieu also presents an example of the rule of actualism in archaeology: “any ancient object made in the same material and following the same process as an object made by a modern-day population must have had a roughly equivalent function” (Schnapp 1996, 267). De Jussieu’s examples were from the cultures of the native peoples of Canada and the Caribbean islands, and he described how the stone artefacts are formulated with great patience and skill and then used for hunting as well as self-defence against enemies. The analogy based on the similarities observed in the objects was fleshed out by this cultural background. This also helped to expand the analogy from artefacts to the whole culture. De Jussieu states that the ancestors of French, German, and Northern European people would have been like the Native Americans, save for the invention of ironmaking.

A decade later in 1734, Nicolas Mahudel presented his paper for the Académie des Inscriptions et Belles-Lettres (Mahudel 1740, original lecture published in Hamy 1906, 251–259). Mahudel presented his take on the theory of the origin of thunderbolts in a few key points: during “centuries after the birth of the world” people did not know how to work bronze or iron, and therefore made tools of stone. Mahudel had studied different kinds of thunderbolts and noted that not all kinds of stone could be used for making them. He aimed to point out a technological analogy with the thunderbolts and modern tools by showing how there were different kinds of tools manufactured for different kinds of purposes (for example axes, adzes, and spear-

heads), each from a suitable type of stone. The continuation of a shape could then be seen in tools made from metals, even until the modern day. Like Mercati, Mahudel was also backing up the theory with textual evidence from the canonical sources of history rather than connecting stone tools to ethnographical observations of continuing traditions in some parts of the world. By associating the tools with the ancient times recorded in the Bible, as well as the works of Classic writers, he aimed to sidestep the problem of fitting them into the known timespan of the human past.

By the 18<sup>th</sup> century, most scholars were ready to accept thunderbolts as man-made objects preceding the use of metals, and they considered the three-age theory plausible. The classical philosophical concept of the gradual technological evolution was connected with the thunderbolts as actual material remains of that ancient era, but still the whole human past had to be fitted into the time-frame recorded in the Bible. Progress made in geology started to bring forth evidence of the Earth being much older (for the history of geological thought during the 18<sup>th</sup> century, see Rudwick 2005). Georges Louis Leclerc theorized in 1778 that the “days” of the Creation represent metaphorical longer epochs of time. According to the theory called catastrophism, several cataclysmic events had ended these different epochs of creation (e.g. Stiebing 1995, 36; Schnapp 1996, 270–271). Even in these theories, the human existence was nevertheless believed to only span the six-thousand years chronicled in the Bible, and humans belonged to the last of these creations. In 1800, John Frere published Palaeolithic tools found from Suffolk together with remains of extinct animals and assumed they





**Figure 3.** The Sun Stone Monolith, also known as the Aztec calendar stone was buried after the Spanish conquest and rediscovered in 1790. It is held in the National Anthropology Museum in Mexico City. *Wikimedia Commons.*

were from “a very remote period indeed; even beyond that of the present world” (Stiebing 1995, 38–39; Schnapp 1996, 285). The existence of Stone Age as a technological epoch was soon to become scientific mainstream, while the discovery and acceptance of the ‘deep time’ was going to last much longer.

As knowledge of the American continent and its cultures became part of the European worldview, it had a tremendous effect also on conceptions other than the understanding of ancient cultures. The Native American peo-

ples and cultures as human presence existing outside the textually built past led to fresh approaches to the discussion on the origins of mankind. This also raised a lot of questions. Where did the Native Americans come from, and why are they not mentioned in the textual tradition depicting the human past? One possible explanation for these mysteries was that the predecessors of the Native Americans had managed to evade the biblical Flood and continued their antediluvian culture up until the contact made with the Europeans (Pratt

2005, 52, 67; Trigger 2006, 92). In this scenario, the concept of antediluvian served as a predecessor to the concepts of prehistory and Stone Age. However, in widely held degenerationist view, it was assumed that peoples who had wandered away in the disarray after the Flood had simply degenerated and forgot the art of metallurgy (Goodrum 2002, 264–265; Trigger 2006, 95). This explained the use of stone among the Native Americans as well as the ancestors of the Europeans. In addition, the contact with the Mesoamerican cultures with their own tradition of historiography and chronology for the human past had an impact on the discussion. For example, the Aztec calendar (Fig. 3) depicted the world as more than 20 000 years old (Schnapp 1996, 226).

The technological analogy was not only applied to stone tools, but also environmental change was explained with it. The observations made by the British of the Native American slash-and-burn cultivation in Jamaica and Virginia led them to think that maybe large forestless areas in Britain had been made in this way as well (Piggott 1976, 112–113). During the 18<sup>th</sup> century some scholars started to pay attention to sustainable agriculture and forestry after observing how Europeans destroyed forests and land in the Americas when engaging in agricultural practices similar to those of the Native Americans. It was argued that the Native peoples had been able to exploit natural resources sustainably largely due to small populations and lack of organized societies. The European settlers' much higher population density and level of technological development enabled them to use natural resources destructively (e.g. Kalm 1753/1991; Väyrynen 2006, 66–68).

Stephanie Pratt (2005, 52–54) has pointed out how the American continent and its indigenous cultures were seen as a time machine offering glimpses of ancient times. The cultures and peoples observed in the New World were thought to be analogous to the different stages and cultures of European history, not only the Stone Age. For example, Celtic tribes and other ancient peoples known from Classical sources were visualised in ways similar to some Native American cultures. The people outside the realm of civilisation were seen in the tradition of the 'noble savage' (Pratt 2005, 66), and some of these connotations were transferred into the concepts of prehistoric cultures and the people of the Stone Age as well. Mesoamerican empires and their customs were just as well likened to the ancient empires of the Old World (see also Piggott 1976, 67).

Pratt analyses a work by Joseph Francois Lafitau, *Moeurs des sauvages américains comparées aux mœurs des premiers temps*, published in 1724, which explores the cultural and societal comparisons between native Americans and ancient cultures. Lafitau had worked as a Jesuit missionary in Canada and had a lot of contact with the Huron, Iroquois and Algonquin peoples. Already in the 1580's, Michel de Montaigne had stated that the American indigenous peoples presented a model for the earlier stages of all mankind and worked as a device for the European people to visualise the past of their ancestors (Pratt 2005, 52–55).

Lafitau's work can be compared to Pehr Kalm's travel diary from his travels in Northern America (Kalm 1753/1991). Kalm's expedition was commissioned by the Swedish Royal Academy of Science. Kalm was a bot-

anist and an economist, and his aim was to study the plants of Northern America as well as to observe the economical and industrial progress in territories controlled by the English and the French. Kalm's travel diary includes several passages describing the Native Americans that he encountered (e.g. Kalm 1753/1991, 129, 144–145). Kalm demonstrates some archaeological interest, for example, when describing a small fort built from large erected stones: “no-one knows if it was built by the savages or the Europeans” (Kalm 1753/1991, 141). Kalm also correctly states that, even though the Native Americans did not know how to use iron before the European contact, they used copper. Near New York is said to exist an ancient mine where copper had been extracted, with holes still visible in the rock. Kalm ponders on the possibility that the copper mine could have been used by Norwegians “who long before Columbus's time sailed to Vinland, which is undoubtedly North America” (Kalm 1753/1991, 77). However, Kalm does not make any comparisons between the Native Americans and the European past.

Kalm writes a lot about the tools and technology of the Native Americans, and he has both seen and collected ancient stone tools, which at the time were not used anymore but were sometimes found while ploughing and digging. Flint and quartz flakes were used as knives and arrowheads, and pots and kettles were made of clay tempered with sand or small pieces of quartz. Some pots were also made of soapstone (Kalm 1753/1991, 88–92). Kalm seems to find it extremely strange, that the Native Americans never understood how to work iron and could be content with making and using stone axes: “Here we can see,

what ignorance and contempt for science cause!” (Kalm 1753/1991, 92). The lack of efficient technology, especially the lack of interest to develop it, is almost the only thing that Kalm finds negative about the Native Americans, and which he sees as evidence of their ‘savagery’ when compared to Europeans.

The same polarisation of primitivism that was present in the attitudes towards the contemporary cultures as ‘primitive’ came to be associated with ancient cultures as well. On one hand, primitive was seen as equal to barbarian, savage, and uncivilised, but on the other primitive was linked to the gentle harmonious lifestyle of ‘the noble savage’, somewhat akin to the mythical Golden Age of mankind, this latter ‘soft primitivism’ dominating the Romantic viewpoint on the past (e.g. Piggott 1976, 69, 112).

The concept of the human race as a product of its natural environment was formed during the 18<sup>th</sup> century, even though the idea of different kinds of cultures evolving because of the differences in the environment and the climate was already present in ancient Greek philosophy (e.g. Jokisalo 2006, 164). The theory of natural determinism was to become very important in archaeology, most importantly in the processual archaeology (or New Archaeology) which, developing in the 1960's, saw cultures in their core as manifestations of human adaptation to the natural environment (e.g. Trigger 2006, 398).

## CONCLUSIONS

Technological and cultural analogies connecting the Native Americans and the prehistory of Europe led to an analogy between the geographically distant New World and



the chronologically distant ancient world. The novel 19<sup>th</sup> century concept and term *prehistory*, especially in English, had a strong connection to ethnographic analogies and modern 'savages' (e.g. Lubbock 1865). The 'Otherness' related to the native cultures of distant lands was also transferred to the concepts of prehistory and the Stone Age (see also Bradley 2002, 3–5). On a metaphorical level, the connotations and visual vocabulary attributed to contemporary 'savages' can be seen as a *travelling concept* crossing over from ethnography and geography to the fields of history and archaeology (e.g. Moser 1998, 2, 24–27; see also Bal 2007, 5; Pollock 2007, xv). The fringe of the Eurocentric worldview became analogous to the fringe of the textually-built European past.

While the analogies between Native Americans and the ancestors of the European people began with technology and artefacts, they eventually expanded to all aspects of culture, and had an especially lasting impact on the visualisations of Stone Age (e.g. Moser 2001; see also Kunas-Pusa 2018). According to Stuart Piggott (1976, 9–10), contact with the native American cultures, and the analogies it provided, was one of the most important things to contribute to the formation of antiquarian thinking, and therefore also archaeology. It was essential for the human past to break free from the tradition of depicting the past in the cultural sphere of the Mediterranean, based on biblical and classical traditions.

In addition, the form and shape of the thunderbolts as an analogy to iron-made axes and arrowheads only served as a clue to their age when assumed that the use of stone preceded iron, and that therefore modern iron axes are imitations of stone implements.

Still, even as late as the mid-19<sup>th</sup> century, it was used as a counter-argument against ancient stone tools that their form could just as well be interpreted as a later degenerate imitation of an ancient iron axe (Trigger 2006, 96), a chronological sequence that seems topsy-turvy to us.

Even though some philosophers and historians of Ancient Greece and Rome were aware of the idea of successive technological epochs in the human past, they did not possess the means to figure out the real age of the Earth and of the mankind, and they felt content with history existing as a semi-mythological dimension. The modern concepts of prehistory, Stone Age, and the three-age system needed more key ingredients besides this classical philosophical tradition. First the analogy between actual material remains and textual sources, then the analogy between the material culture of ancient times and observations of contemporary Native populations, as well as the analogy between stone tools and modern tools, leading to the understanding that the ancestors of European people have at some point been unaware of bronze or iron. Finally, this observation, combined with typological sequencing of Stone Age artefacts and the establishment of absolute chronology for the human past added further temporal dimensions. The conceptual history of Stone Age and its entanglement with contemporary native peoples is based on these four different cases of analogy entwined with each other: ethnographic, technological, cultural, and the geographical coupled with the temporal.

Even with all this information, the concept of Stone Age as a real 'place' far away in time is still hard to grasp. Stone Age is often depicted through extremities and via the

same metaphors already included in the old concepts of the furthest past. The Stone Age is often imagined as either a peaceful golden era of mankind or a grim and violent place where humans existed in perpetual struggle against nature. In reality, the Stone Age encompasses such an enormous time span and such cultural variety that it is nearly incomprehensible to us. The very existence of this remote place (in the temporal sense) is greatly dependent on the analogy of geographically distant lands and cultures. Analogies were essential in forming the now familiar concept with its connotations, and if we remove these analogies from the concept of Stone Age, we are faced with a foggy past that is almost as hard to depict as the concept of the most distant past was to the antiquarians confided in the textually built history.

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## REFERENCES

- Bal, M. 2007. Working with Concepts. In *Conceptual Odysseys. Passages to Cultural Analysis*. Ed. G. Pollock. I.B. Tauris, London, 1–10.
- Ball, T. 1998. Conceptual History and the History of Political Thought. In *History of Concepts. Comparative Perspectives*. Eds. I. Hampsher-Monk, K. Tilmans & F. van Vree. Amsterdam University Press, Amsterdam, 75–86.
- Baudou, E. 2004. *Den nordiska arkeologin – Historia och tolkningar*. Kungliga Vitterhets historie och antikvitets akademien, Stockholm.
- Blinkenberg, C. 1911. *The Thunderweapon in Religion and Folklore. A Study in Comparative Archaeology*. Cambridge University Press, Cambridge.
- Bradley, R. 2002. *The Past in Prehistoric Societies*. Routledge, London.
- Bödeker, H.E. 1998. Concept – Meaning – Discourse. *Begriffsgeschichte reconsidered*. In *History of Concepts. Comparative Perspectives*. Eds. I. Hampsher-Monk, K. Tilmans & F. van Vree. Amsterdam University Press, Amsterdam, 51–64.
- Clark, G. 1992. *Space, Time and Man. A Prehistorian's View*. Cambridge University Press, Cambridge.
- Clarke, D. 1968/2008. Introduction and Polemic. In *Histories of Archaeology. A Reader in the History of Archaeology*. Eds. T. Murray & C. Evans. Oxford University Press, Oxford, 46–57.
- Daniel, G. 1962. *The Idea of Prehistory*. London.
- Daniel, G. 1967. *The Origins and Growth of Archaeology*. Penguin Books, Harmondsworth.
- Gadd, P./Ramstadius A. 1776. *Academisk afhandling, om finska jaspis-arter och agater: med philos. facultetens samtycke vid Kongl. Akademien i Åbo, under herr Pehr Adrian Gadds inseeende, utgifven och försvarad af Alexander Ramstadius*. Frenckell, Åbo.
- Goodrum, M.R. 2002. The Meaning of Ceraunia: Archaeology, Natural History and the Interpretation of Prehistoric Stone Artefacts in the Eighteenth Century. *British Journal for the History of Science*, 35 (126), 255–269.
- Goodrum, M.R. 2008. Questioning Thunderstones and Arrowheads: The Problem of Recognizing and Interpreting Stone Artifacts in the Seventeenth Century. *Early Science and Medicine*, 13 (5), 482–508.
- Gräslund, B. 1987. *The Birth of Prehistoric Chronology. Dating methods and dating systems in nineteenth-century Scandinavian archaeology*. Cambridge University Press, Cambridge.
- Hamy, T. 1906. Matériaux pour servir à l'histoire de l'archéologie préhistorique. *Revue archéologique* 1906, I, 239–259.
- Hartog, F. 2005. *Anciens, Modernes, Sauvages*. Galaade Éditions, Paris.
- Hyvärinen, M., Kurunmäki, J., Palonen, K., Pulkkinen, T. & Stenius, H. (eds) 2003. *Käsitteet liikkeessä. Suomen poliittisen kulttuurin käsitehistoriaa*. Vastapaino, Tampere.
- Johanson, K. 2009. The Changing Meaning of 'Thunderbolts'. *Folklore. Electronic Journal of Folklore*, 42. <https://www.folklore.ee/folklore/vol42/johanson.pdf>. (Read 20.5.2018)
- Jokisalo, J. 2006. Herder ja 1700-luvun lopun keskustelu rodusta, afrikkalaisista ja ihmisyydestä. In *Herder, Suomi, Eurooppa*. Eds. S. Ollitervo & K. Immonen. Suomalaisen Kirjallisuuden Seuran Toimituksia 1060. SKS, Helsinki, 158–166.
- de Jussieu, A. 1730. De l'Origine et des Usages de la Pierre de Foudre. *Histoire de l'Académie Royale des Sciences. Mémoires de Mathématique & de Physique, tirés des registres de l'Académie Royale*

- des Sciences. De l'Année M. DCCXXII. Pierre de Coup, Amsterdam, 7–11.
- Kalm, P.** 1753/1991. *Matka Pohjois-Amerikkaan*. Edited by Anto Leikola, translated by Rauno Ekholm. Suomalaisen Kirjallisuuden Seuran Toimituksia 549. SKS, Helsinki.
- Klindt-Jensen, O.** 1975. *A History of Scandinavian Archaeology*. Thames & Hudson, London.
- Koselleck, R.** 1998. Social History and Begriffsgeschichte. In *History of Concepts. Comparative Perspectives*. Eds. I. Hampsher-Monk, K. Tilmans & F. van Vree. Amsterdam University Press, Amsterdam, 23–36.
- Koselleck, R.** 2004. *Futures Past. On the Semantics of Historical Time*. Translated and with an introduction by Keith Tribe. Columbia University Press, New York.
- Kunnas-Pusa, L.** 2016. Tärvellyt ja kaaputetut – Kivikautiset irtolöydöt Jaakkiman pitäjässä ja kivikauden esineiden keräily 1800–1900-lukujen vaihteessa. *Muinaistutkija* 2016 (4), 2–17.
- Kunnas-Pusa, L.** 2018. Kivikauden kuvia. Kaukaisimman menneisyyden representaatiot Suomi-kuvaa rakentamassa. *Ennen ja nyt – Historian tietosanomat* 2018 (3). <http://www.ennenjanyt.net/2018/10/kivikauden-kuvia-kaukaisimman-menneisyyden-representaatiot-suomi-kuvaa-rakentamassa/>. (Read 16.11.2018)
- Locke, J.** 1689/1960. *Two Treatises of Government*. Cambridge University Press, Cambridge.
- Lubbock, J.** 1865. *Pre-Historic Times as Illustrated by Ancient Remains and the Manners and Customs of Modern Savages*. Hertford.
- Mahudel, N.** 1740. Sur les pretendues Pierres de Foudre. *Histoire de l'Académie Royale des Inscriptions et Belles-Lettres avec les Mémoires de littérature tirés des registres de cette Académie, depuis l'année M. DCCXXXIV, jusques & compris l'année M. DCCXXXVII*. L'Imprimerie Royale, Paris, 163–169.
- Mercati, M.** 1719. *Metallothesca Vaticana*. Opus posthumum. Opera autem, & studio Ioannis Mariae Lancisii. Roma
- Moser, S.** 1998. *Ancestral Images. The Iconography of Human Origins*. Sutton Publishing, Stroud, Gloucestershire.
- Moser, S.** 2001. Archaeological Representation. The Visual Conventions for Constructing Knowledge about the Past. In *Archaeological Theory Today*. Ed. I. Hodder. Polity Press, Cambridge, 262–283.
- Muhonen, T.** 2006. Kolme ajallista näkökulmaa ukonvaajoihin. Kivikauden kiviesineet myöhempien aikojen kuriositeetteina. *Kuriositeetikabi.net* 2006 (3). <http://kuriositeetikabi.net/numero3/Ukonvaajat.pdf>. (Read 20.5.2018)
- Nivala, A. & Rantala, H.** 2012. Käsitehistoria kulttuurihistoriallisena tutkimusmenetelmänä. In *Tulkinnan polkuja. Kulttuurihistorian tutkimusmenetelmiä*. Eds. A. Nivala & R. Mähkä. Turun yliopisto, Turku, 222–243.
- Olivier, L.** 2013. Time. In *The Oxford Handbook of the Archaeology of the Contemporary World*. Eds. P. Graves-Brown, R. Harrison & A. Piccini. Oxford University Press, Oxford, 167–177.
- Piggott, S.** 1976. *Ruins in a Landscape. Essays in Antiquarianism*. Edinburgh University Press, Edinburgh.
- Pollock, G.** 2007. Editor's preface. In *Conceptual Odysseys. Passages to Cultural Analysis*. Ed. G. Pollock. I.B. Tauris, London.
- Pratt, S.** 2005. The American Time Machine. Indians and the Visualization of Ancient Europe. In *Envisioning the Past. Archaeology and the Image*. Eds. S. Smiles & S. Moser. Blackwell Publishing, Malden & Oxford, 51–71.
- Rowley-Conwy, P.** 2007. *From Genesis to Prehistory. The Archaeological Three Age System and Its Contested Reception in Denmark, Britain and Ireland*. Oxford University Press, Oxford.
- Rudwick, M.J.S.** 2005. *Bursting the Limits of Time. The Reconstruction of Geohistory in the Age of Revolution*. University of Chicago Press, Chicago.
- Schnapp, A.** 1996. *The Discovery of the Past. The Origins of Archaeology*. British Museum Press, London.
- Sihvola, J.** 1987. Hesiodoksen näkemys kulttuurin kehityksestä: Välttämätön rappio vai hyvän elämän mahdollisuus. In *Hyveestä, tiedosta ja vallasta. Aatehistoriallisia tutkimuksia*. Ed. K. Mustakallio. Historiallinen yhdistys, Helsinki, 7–49.
- Stiebing, W.H.** 1995. *Uncovering the Past. A History of Archaeology*. Oxford University Press, New York.
- Suhm, P.F.** 1769. *Forsøg til et Udkast af en Historie over Folkenes Oprindelse i Almindelighet, som en Inledning til de Nordiske Folkes i Særdeleshed*. Berling, Copenhagen.
- Suhm, P.F.** 1770. *Om de Nordiske Folks ældste Oprindelse*. Berling, Copenhagen.
- Suhm, P.F.** 1802. *Udtog af Danmarks, Norges og Holstens Historie, til Brug for den studerende Ungdom*. 4<sup>th</sup> Edition. Gyldendal, Copenhagen.
- Sullivan, L.H.** 1896. The Tall Office Building Artistically Considered. *Lippincott's Magazine*, March 1896, 403–409.
- The Guardian** 16.2.2011. Cheddar cave dwellers ate their dead and turned their skulls into cups. <https://www.theguardian.com/science/2011/feb/16/cheddar-cave-skull-cups>. (Read 30.5.2018).
- Thomsen, C.J.** 1836. *Ledetraad til Nordisk Oldkynighed*. Copenhagen.
- Trigger, B.G.** 2006. *A History of Archaeological Thought*. 2nd Edition. Cambridge University Press, New York.
- Väyrynen, K.** 2006. Luonto ja luonnon suojelu Herderillä. In *Herder, Suomi, Eurooppa*. Eds. S. Ollitervo & K. Immonen. Suomalaisen Kirjallisuuden Seuran Toimituksia 1060. SKS, Helsinki, 158–166.

## NOTES

- 1 The complete paragraph reads: “Whether it be the sweeping eagle in his flight, or the open apple-blossom, the toiling work-horse, the blithe swan, the branching oak, the winding stream at its base, the drifting clouds, over all the coursing sun, form ever follows function, and this is the law. Where function does not change, form does not change. The granite rocks, the ever-brooding hills, remain for ages; the lightning lives, comes into shape, and dies, in a twinkling. It is the pervading law of all things organic and inorganic, of all things physical and metaphysical, of all things human and all things superhuman, of all true manifestations of the head, of the heart, of the soul, that the life is recognizable in its expression, that form ever follows function. This is the law.”
- 2 Glyn Daniel can be an unreliable source when dealing with the history of Scandinavian archaeology. Rowley-Conwy (2007, 13–16) has stated that Daniel, for example, exaggerates Worsaae as a pioneer of stratigraphy by suggesting that Worsaae managed to prove Thomsen’s “museum-born” idea of the three ages by using evidence gathered from fieldwork. See also Clarke 1968/2008, 53–55.
- 3 The New World is only mentioned in passing: “Nostra aetate nullum erat ferrum conflatile in regionibus orbis occidui, navigia, domos, omniaque fabrilia lapidibus in aciem sectis extruebant”: “During our time, in the western parts of the world where iron is not used, many things (including houses) are made with stone implements” (translation by author). (Mercati 1719, 243).
- 4 Recognition of organic material such as wood, bone, and horn as ancient raw materials developed hand in hand with the recognition of stone tools, but it was naturally understood that they decomposed relatively fast (e.g. Daniel 1967, 90–91). However, the use of organic raw materials for tools instead of iron among the “savages” was already observed, for example, by Tacitus when describing the barbaric peoples of northern Europe. The cultural attitude held by the classical writers towards the barbaric peoples can be seen as loosely analogous to the later dichotomy between European and “Other” (see Hartog 2005).
- 5 “Thus, in the beginning all the world was America” is a famous citation from philosopher John Locke’s *Two Treatises of Government* (1689/1960). Locke uses several examples from the culture and society of Native Americans to explain and to contradict features of modern society. He uses the sentence when considering property and refraining to the economy of the past when the use of money was not yet invented. Pratt (2005,

52–53) uses the citation when emphasising the tremendous effect of Native American cultures on European understanding of history and society (see also Trigger 2006, 116).

# SENSING WITHIN: SOMATIC PRACTICE AND ARCHAEOLOGICAL OBJECTS

SUVI TUOMINEN

This article discusses an improvisational somatic practice done in collaboration with archaeological objects and a dancer. In the article, somatic practice is considered a form of practice-led research and an epistemological orientation towards, rather than representation of, archaeological objects. In escaping fixed definitions of scientific procedures, somatic practice aims to highlight the materiality of perception and wonder as well as the sensuousness and affectivity of archaeological objects. The exercise in somatic practice reported here exposed interesting terrains of intimacy shared with past beings.

*Keywords:* archaeological objects, dance, intimacy, movement, somatics

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## INTRODUCTION

This article is a rhizomatic drifting of thoughts, blood vessels, stone artefacts, ancestral energies, skin, velvet, and many other material components. The article embraces those archaeological terrains that always remain silent, intimate, and withdrawn from the discursive. By bringing forth a connection between somatic practice and archaeology, this article passes through a space beyond the conceptual, and brings the attention back to the material. The article presents no clear research questions, explanations, or answers, and its form is essay-like. What this article does, is that it proposes an interesting epistemological orientation towards archaeological objects.

The focal point of this article is the description of an exercise in somatic practice done together with a dancer and archaeological stone artefacts. In addition to its connection to archaeological thought through archaeological objects, the described exercise in somatic practice can also be situated within the context of artistic research. Shortly, artistic research could be conceptualised as practice-led research, which uses artistic methodology in order to increase understanding of a particular research question, and thus combine theoretical approaches with artistic practices (e.g. Hannula 2004, 70; Hannula et al. 2005). However, artistic research can also refer to an experimental, reflexive and interdisciplinary setting where

the emphasis is on emergent knowledges and research processes rather than on finding answers to these research questions or creating an artistic representation of a research topic (Barrett 2007, 1–8; 2014, 4). For example, our exercise in somatic practice described in this article never meant to be something that could later translate to a textual medium, to a dance performance, or even directly contribute to conceptual debates approved by the current academia (c.f. Butt 2017). Rather, our attempt was to do something out of the ordinary, performative, carnal, bold, and intuitive with archaeological objects in order to expose new modes of being and knowing with these objects (for further discussion related to art-archaeology and its diverse manifestations, see, for example, Bailey 2013; 2014; 2017; 2018; Russel & Cochrane 2013).

Though the exercise described in this article might seem like a ‘dead-end’ in light of the accumulative view of archaeological knowledge and the progressive view of technological innovations and research methods, the article explicitly aims to bring the attention back to the materiality of perception, wonder, sensuous objects, things and affects. In this way, both our exercise in somatic practice and the attempt to conceptualise the act itself resonate interestingly with not only thoughts native to phenomenological archaeology but also with the theoretical debates taking place in archaeology today (e.g. Tilley 1994; 2004; Ingold 2007; Olsen 2010; 2012; Hamilakis 2013; Pétursdóttir 2012; Witmore 2014; Harris & Cipolla 2017, 129–151). Furthermore, it is also important to note that using or conceptualising artistic methods, especially as a means to intensify somatic engagement with, for example, archaeological sites, is not un-

precedented, and therefore carries with it an interesting potentiality that should be further explored (e.g. Hamilakis et al. 2001; Pearson & Shanks 2001; Witmore 2005; Bender et al. 2007; Sørensen 2010). Before describing in detail our exercise in somatic practice, as well as the relevance of somatic practice for archaeology, I will discuss shortly the concepts of soma and somatic practice.

## SOMATIC PRACTICE

Conceptually, somatics refers to a wide range of physical movement practices and, for example, in connection with dance it is mostly understood as a reaction to and critique of those disciplinary practices that target so-called external performative techniques like ballet or other formal virtuosic dance practices (e.g. Hartley 1995; Miller et al. 2011; Brodie & Lobel 2014). The word soma derives from the Greek word *sōma* and directly translates as body. Soma, in this case, then, refers to a sentient lived body as the locus for the incorporation of subjectivity and perception, both of which are crucial aspects in the aesthetics of embodiment (Shusterman 2012, 5–6). Somatic practices, then, are known as a field consisting of various movement exercises that mainly focus on the internal perception, sensations, and experience of the practitioner. A practice in somatics can be either very strictly choreographed or, in contrast, happen in a loose and unstructured improvisational setting. Nevertheless, the field of somatic practices and its methods are also constantly re-articulated in connection with, for example, the discursive fields in dance, choreography, movement therapy, dance pedagogy, and so on so the contents of the concept are





**Figure 1.** Velvet fabric was used to cover the floor of the classroom. The objects and the dancer were placed on its smooth surface. *Photo by Suvi Tuominen.*

extremely fluid (for some current discussions see, for example, Whatley et al. 2015).

Lately, various forms of perceptual practices in dance, choreography and contemporary performance have come to emphasise the material and socio-political aspects of movement, rather than seeing movement as only an individual sensation or imaginative creation of the practitioner (e.g. Klein & Noeth 2011; Kowal et al. 2017). Among the discursive field in dance, this has led to articulations that have stressed the underlying problems with such ontological divisions as body-space, self-other, private-public, human-nonhuman, human-inanimate (e.g. Vincs 2007; Forsythe

2011; Lepecki 2016, 85–114). Therefore, such forms of practices as somatic practice interestingly suggest that those intimate sensations that we feel with archaeological objects could actually be something that we can also intimately share with past beings and their bodies as knowledge of objects (for the importance of sensuality and empathy in archaeology see, for example, Marila 2017; Sørensen 2017). By keeping these frameworks in mind, I wanted to explore what kind of perspectives or forms of knowledge somatic practice could bring to archaeology. The following is a description of an instance of such practice.



*Our exercise in somatic practice*

Our exercise in somatic practice was carried out at the University of Helsinki archaeology department with stone artefacts found from central and northern Finland. Two stone tools, an ice pick and a battle-axe, were removed from a glass vitrine where they are normally held for educational purposes. The practice also included arrowheads and fragments of spearheads whose context is undetermined, a fact that would render these objects of little research value. These arrowheads and fragments of spearheads were chosen because they lack the answers that most archaeologists desire to have of them. They are most often kept in a cardboard box.

The floor of a classroom was covered with black velvet and the lighting of the room was designed by setting up a few laboratory lamps (Fig. 1). The reason to change the room in such a way was to strip it of its everyday form of being. The timeframe for the practice was around 40 minutes.

The practice included three 'living' people: Ida Teeri, a dancer/practitioner, myself as the choreographer and the researcher/observer, and Jakub Bobrowski who designed the lighting and likewise served as witness to the exercise. Ida has her background in dance, theatre, and physical theatre. She has a degree in contemporary dance education with focus on movement research and somatic practices. Ida had no knowledge of the dating, find context, research history, or archaeologists' interpretations of the objects. The main reason for keeping her in the dark in regards to the interpretive burdens that the objects carry was to avoid representational movements that might emerge from such knowledge. In this sense, the objective of the exercise was rather to result in move-

ment that was translativity of the objects themselves, rather than their imagined biographies.

**Step 1: approaching and asking questions with the soma**

The practice started with being. The dancer placed herself on the floor beside the objects and allowed the space to calm down. She lifted her head up and asked one more question, 'will you guide me? I am not sure what I am doing.' I responded, 'of course', and she surrendered to gravity.

The dancer started to move her limbs and explore the weight of her arms and legs. She did a little bit of shaking and rotating. She placed her hands beside the objects, but did not touch them yet. It seemed as though she was comparing her hands to the stone objects. She rotated her hand many times; palm up, and palm down. Suddenly, she placed her hand behind her neck and turned her back to the objects. It seemed that she was not yet ready to touch them or that the stones would not allow her interference with them yet.

The dancer placed herself in a new position and crouched on top of the arrowheads and fragments of spearheads (Fig. 2). She did the same routine with her hand, placing palms upwards and downwards. She started twisting and turning her position in relation to the arrowheads as if she was asking 'what if I placed myself here like this, or turn my head, or what if...?' The questions seemed to be purely embodied.

After a while the dancer suddenly placed her hand on the ice pick and allowed it to rest there for several minutes. She began pulling her hand slowly away from the object, allowing her palm to turn upwards. She stood up and kept her palm in the same position as if



**Figure 2.** The dancer asking guidance from the fragments of spearheads and arrowheads.  
*Photo by Suvi Tuominen.*

the material of the stone was echoing in her hand. She crouched again and placed herself in a new position in relation to the ice pick. This time she approached it with a very light touch and repeated a pattern that looked like petting. This moment created an intense energy in the space and there was a definite feeling that something new was emerging. The ice pick is typically discussed and interpreted as a functional tool, but now it seemed to be transforming into something else. It seemed that, while placing her hand gently on the dark surface of the ice pick and gliding her fingers across the smooth and polished skin of this stone artefact with a mellow touch, it became something other than just a functional tool, a label it has been carrying for decades.

There are numerous ways in which artefacts like this can be approached. It was interesting to see how the dancer repeated similar kinds of patterns with her body multiple times in order to discover some unforefelt level of sensitivity

in approaching the artefacts. She allowed slowness to be present in order to become aware of all the possible perceptions. Maybe due to this slowness, the dancer did not have time at all to approach the battle axe during the practice.

### **Step 2: choreographic interference**

After allowing the dancer to create a shared space with the artefacts, I started to manipulate her with different sentences and questions, just like a researcher manipulates her/his materials. These choreographic questions or interferences were a crucial part of the practice because they work as milestones that can be reflected upon after the practice.

I asked the dancer to imagine that the person/persons who made these artefacts is/are now dead. She kept on moving and rotating, exploring different positions in relation to the artefacts. She once again placed herself next to the arrowheads and fragments of spearheads, and for the first time touched them very light-



**Figure 3.** The dancer organised the fragments of spearheads and arrowheads from the largest to the smallest. *Photo by Suvi Tuominen.*

ly and gently. All of the sudden, she began to organise them (Fig. 3). She placed them in a row from the largest to the smallest. I again manipulated her to imagine that the persons who made these artefacts are now dead. And she left the arrowheads in peace and just sat next to them for a few minutes.

While the practice continued and the dancer kept exploring different ways of being, she was slowly giving up her clothes. This

issue was discussed before the practice started and was suggested only as an *if*. The idea behind this suggestion was that the dancer could expose her body to air and give up the burden of clothes. I also explicitly wanted to discover the soma without clothes in the presence of the artefacts in order to search for potentials in the soma (spine, hair, skin, breasts) that could be entangled with any materials of any given time period.



**Figure 4.** The dancer sensing the ice pick close to her body. *Photo by Suvi Tuominen.*

She approached the ice pick again and this time she picked it up, moved it close to her soma and begun to bring it towards her skin (Fig. 4). It seemed that she was exploring the materiality of the stone, not only with her hands but also with her legs, stomach, hair, and face (Fig. 5). I manipulated her again to imagine that this soma could be set in any timeframe in the past and that the only thing that separates us from them is the entanglement with different materials – our material somas are the same.

The dancer moved for a while and held one fragment of spearhead tightly in her fist. I told her that soon this practice would come to an end. She sat on the floor and kept the fragment tight in her hand. After a few minutes she released, got dressed, and returned.

### **Step 3: reflection**

Our exercise in somatic practice concluded with a discussion and reflection on the practice. It goes without saying that this practice would have needed more than the 40 minutes



**Figure 5.** The dancer exploring the materiality of the stone with her hair. *Photo by Suvi Tuominen.*

that it spanned. Nevertheless, the practice resulted in interesting insights to the relationship between archaeological artefacts and the soma. The most interesting outcomes of the practice are presented here as comments from the dancer:

“The heavy stone artefacts kept pulling me towards the ground. It felt very artificial to stand very straight. I needed to keep my center active. The weight of the artefacts affected my spine and twisted my body a little bit. I noticed that while lifting the artefacts I did not allow the weak muscle chains to appear and I really needed to activate the whole body.”

“It was very hard for me when you manipulated me to think that the person who made this is now dead. It was difficult to reach so far back in time in thought. However, through the artefacts, I was able to reframe myself and think that I am now in touch with the timeframe of the humans who made these objects.”

“It seemed like the body can become analogous to a body that once sensed the materiality of these exact same stone artefacts. The body creates a dialogue and a relationship where, through movement, I am bridging with a sensation that someone has experienced once with these artefacts and their materiality.

“These objects carry a lot of energy. Makes me feel weird. About myself. About this situation. Maybe this was the end of me. Sigh.”

## CONCLUSION

Somatic practice as a form of a bodily research method explores the various ways in which archaeological objects can be felt within. Somatic knowledge is to be considered as something that emerges as result of being in touch with objects. At first glance, somatic practice seems to escape or appear as incommensurable with those procedures that are considered scientific. This, in turn, might raise suspicion as to the practice's relevance to archaeological knowledge. However, somatic practice can provide useful ways to deal with the sensation of distance that is sometimes created when studying objects through established scientific methods. In other words, practices common to archaeology often seek to escape the multiple forms of layered energies loaded in objects by aiming to provide accounts, histories, or explanations that transcend the material existence of the object.

Our exercise in somatic practice made me think that the somatic experiences expressed by the dancer later on and the empirical discoveries she made emerged simultaneously from the entanglement between the dancer and the objects. These discoveries started to speak as shared intimate sensations that might take us closer to those affects that were felt in the presence of these objects also in the past. However, the emergence of such knowledge should not be discussed through reducing bodily knowledge into something that exists as separate from the mind and the memory or the intimate, experienced, and fluid performative lived body. Therefore, the archaeological objects can interestingly also reframe a soma in the present and make it perform bodily memories it has never really actually experienced. In other words, the soma can



become an archaeological landscape and an excavation site in its own right.

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## REFERENCES

- Bailey, D. 2013. Cutting the earth/cutting the body. In *Reclaiming Archaeology. Beyond the Tropes of Modernity*. Ed. A. González-Ruibal. Routledge, London, 337–345.
- Bailey, D. 2014. Art/archaeology/art: letting-go beyond. In *Art and Archaeology. Collaborations, Conversations, Criticisms*. Eds I.A. Russell & A. Cochrane. Springer, New York, 231–250.
- Bailey, D. 2017. Art/archaeology: what value artistic-archaeological collaboration? *Journal of Contemporary Archaeology*, 4 (2), 246–256.
- Bailey, D. 2018. *Breaking the Surface. An Art/Archaeology of Prehistoric Architecture*. Oxford University Press, Oxford.
- Barrett, E. 2007. Introduction. In *Practice as Research. Approaches to Creative Arts Enquiry*. Eds E. Barrett & B. Bolt. I.B. Tauris & Co., London, 1–8.
- Barrett, E. 2014. Introduction: Extending the Field: Invention, Application and Innovation in Creative Arts Enquiry. In *Material Inventions. Applying Creative Arts Research*. Eds E. Barrett & B. Bolt. I.B. Tauris & Co., London, 1–21.
- Bender, B., Hamilton, S. & Tilley, C. 2007. *Stone Worlds. Narrative and Reflexivity in Landscape Archaeology*. Left Coast Press, Walnut Creek, CA.
- Brodie, J.A. & Lobel, E.E. 2014. *Dance and Somatics. Mind-Body Principles of Teaching and Performance*. McFarland, Jefferson, NC.
- Butt, D. 2017. *Artistic Research in the Future Academy*. Intellect, Bristol.
- Forsythe, W. 2011. Choreographic Objects. In *William Forsythe and the Practice of Choreography. It Starts from Any Point*. Ed. S. Spier. Routledge, Oxon, 90–92.
- Hamilakis, Y. 2013. *Archaeology and the Senses. Human Experience, Memory, and Affect*. Cambridge University Press, Cambridge.
- Hamilakis, Y., Pluciennik, M. & Tarlow, S. 2001. Academic performances, artistic presentation. *Assemblage. The Sheffield Graduate Journal of Archaeology*, 6. [[http://archaeologydataservice.ac.uk/archives/view/assemblage/html/6/art\\_web.html](http://archaeologydataservice.ac.uk/archives/view/assemblage/html/6/art_web.html)], accessed 22.10.2018.
- Hannula, M. 2004. River low, mountain high. Contextualizing artistic research. In *Artistic Research*. Eds A.W. Balkema & H. Slager. Lier en Boog, Amsterdam, 70–79.
- Hannula, M., Suoranta, J. & Vadén, T. 2005. *Artistic Research. Theories, Methods and Practices*. Academy of Fine Arts, Helsinki.
- Harris, O.J.T. & Cipolla, C. 2017. *Archaeological Theory in the New Millennium. Introducing current perspectives*. Routledge, Oxon.
- Hartley, L. 1995. *Wisdom of the Body Moving. An introduction to Body-Mind Centering*. North Atlantic Books, Berkeley.
- Ingold, T. 2007. Materials against materiality. *Archaeological Dialogues*, 14 (1), 1–16.
- Kowal, R.J., Siegmund, G. & Martin, R. (eds) 2017. *The Oxford Handbook of Dance and Politics*. Oxford University Press, New York.
- Klein, G. & Noeth, S. (eds) 2011. *Emerging Bodies. The Performance of Worldmaking in Dance and Choreography*. Transcript, Bielefeld.
- Lepecki, A. 2016. *Singularities. Dance in the Age of Performance*. Routledge, Oxon.
- Marila, M. 2017. Vagueness and archaeological interpretation: a sensuous approach to archaeological knowledge formation through finds analysis. *Norwegian Archaeological Review*, 50 (1), 66–88.
- Miller, G.W., Ethridge, P. & Morgan, K.T. (eds) 2011. *Exploring Body-Mind Centering. An Anthology of Experience and Method*. North Atlantic Books, Berkeley.
- Olsen, B. 2010. *In Defense of Things. Archaeology and the Ontology of Objects*. Altamira Press, Lanham.
- Olsen, B. 2012. After interpretation: remembering archaeology. *Current Swedish Archaeology*, 20, 11–34.
- Pearson, M. & Shanks, M. 2001. *Theatre/Archaeology*. Routledge, London.
- Pétursdóttir, Þ. 2012. Small things forgotten now included, or what else do things deserve? *Journal of Historical Archaeology*, 16 (3), 577–603.
- Russel, I.A. & Cochrane, A. 2013. *Art and Archaeology. Collaborations, Conversations, Criticisms*. Springer, New York.
- Shusterman, R. 2012. *Thinking Through the Body. Essays in Somaesthetics*. Cambridge University press, New York.
- Sørensen, T.F. 2010. *Archaeology of Movement. Materiality, Affects and Cemeteries in Prehistoric and Contemporary Odsherred, Denmark*. PhD Thesis. University of Aarhus.
- Sørensen, T.F. 2017. The two cultures and a world apart: archaeology and science at a new crossroads. *Norwegian Archaeological Review*, 50 (2), 101–115.
- Tilley, C. 1994. *A Phenomenology of Landscape. Places, Paths and Monuments*. Berg, Oxford.



- Tilley, C.** 2004. *The Materiality of Stone. Explorations in Landscape Phenomenology*. Berg, Oxford.
- Vincs, K.** 2007. Rhizome/MyZone: a case study in studio-based dance research. In *Practice as Research. Approaches to Creative Arts Enquiry*. Eds E. Barrett & B. Bolt. I.B. Tauris & Co., London, 99–112.
- Whatley, S., Brown, N. G. & Alexander, K.** (eds) 2015. *Attending to Movement: Somatic Perspectives on Living in this World*. Triarchy Press, Axminster.
- Witmore, C.L.** 2005. Four archaeological engagements with place. Mediating bodily experience through peripatetic video. *Visual Anthropology Review*, 20 (2), 57–71.
- Witmore, C.L.** 2014. Archaeology and the New Materialisms. *Journal of Contemporary Archaeology*, 1 (2), 203–246.

# THE PAST ABOVE US

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While the cognitive sciences have offered evidence that analogical thinking ‘happens’ within discreet regions of the brain, it could also be fairly posited that its occurrence within certain regions of the landscape or built environment is no accident; that certain places lend themselves to the production of metaphor, analogy, imagination and reverie. The attic is one such place. Accompanied by an almost impossible burden of metaphorical weight, the attic – with its unfinished, open and hidden features (among others) – is also a place for the production of metaphor, for the building of models and miniaturizations of the world outside. This article will look at two attic spaces to suggest a possible topography of metaphor: the unfinished upper floor of Arisbe, the home of Charles and Juliette Peirce in Milford, Pennsylvania, U.S.A.; and the attic of a two-storied gabled house in Whiteport, New York, a residence for workers associated with the nearby cement industries of Whiteport and Rosendale.

*Keywords:* attic space, garret, historical archaeology, C.S. Peirce, metaphor, childhood.

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## INTRODUCTION

The material remains of the attic space challenges the standard archaeological belief that what is older is beneath us. Immersed as we are in the “archaeosphere” (Edgeworth et al. 2015), or the “old-sphere” – traversing the old sky, breathing the old air, speaking and writing with the old worn-out words of the Anthropocene, as amphibious “people of the air-ocean” (Goethe, as quoted in Sullivan 2014, 85) – we now find ourselves fully immersed within the archaeological matrix and have no

recourse for gaining context from the outside. We do not stand above the archaeological object or the past; rather it looms over us, even at night, when, if we are lucky, we can see the stars that glimmer with the light of the cosmic past, as the remains of past human ambition shine down in the lonely twinkle of an obsolete satellite wobbling across the sky (Gorman 2014, 88). Like blind moles, archaeologists are now “digging up and digging down” (Dobraszczyk et al. 2015). In the social realm, this recognition of verticalism has political connotations; but within the realm of indi-

vidual lives, an archaeological awareness of the verticality of the structures that we inhabit reveals a psychic range that reaches down to an “oneiric depth” (Bachelard 1969[1958], 33) and stretches upward to an “uplifted consciousness” (Bachelard 1969 [1958], 53). In contrast with the cellar, the attic space is charged with metaphorical weight of a particular kind. Among other things, the attic space can be a repository of memories, where the past is not buried but elevated.

Sometimes, as when entering an abandoned house, the past looms over us: heavily, dangerously. We then often have to test the rotting posts and beams to make sure the structure will not collapse upon us. Moving upward, the attic space beckons us to look skyward, to the rooflines and the skies beyond them. The gabled, pitched roof indexically points upward, and seems to aspire to touch the heavens. This pointing heavenward hearkens back to a religious temperament that infused American sensibility during early years of European settlement. This was a Calvinist belief system that saw the sky in far less human terms, a time when the impersonal weathervane determined daily economic fortunes, when gravity held human beings fast to the earth and the worldly task was to prove that one was worthy of eternal life in the heavens through a demonstration of works on the ground (Weber 1905; Mecklin 1934). Within this context, the attic or the spire emerged above the swampy mists as a form of defiance, as did the factory smokestack, which Lewis Mumford characterized as the incense-burner of industrial society (Mumford 1955 [1924], 83).

The attic – as a source of metaphorical abundance – is almost too rich to approach. It remains an unquestioned space, a given.

The whole of which it is a part – the house – is generous in its symbolic and metaphorical associations. While writing this paper, I have found the subject of the house to be so accomodating that it has become – as Bachelard has rightly observed – “hard to use” (Bachelard 1969 [1958], 47). The house and its parts; the attic, the cellar, resist instrumentalisation. One tends to return to them as a place of synthesis and reintegration, not analysis.

Nevertheless, within countless literary works, the attic (also known as the ‘lumber room’ – a storage space for cumbersome items) has served as a metaphor for the human mind; for human cognition and memory: “The mind has been called a lumber-room, and its contents or its printed products described as lumber, since about 1680” (Baker, as quoted in Fernald 2006, 51). The use of the attic as a metaphor for cognitive and mnemonic function also finds expression in the character of Sherlock Holmes:

“I consider that a man’s brain originally is like a little empty attic, and you have to stock it with such furniture as you choose. A fool takes in all the lumber of every sort that he comes across, so that the knowledge which might be useful to him gets crowded out, or at best is jumbled up with a lot of other things, so that he has a difficulty in laying his hands upon it. Now the skillful workman is very careful indeed as to what he takes into his brain-attic.” (Doyle 1890)

In spite of their metaphorical richness, the attic, the house and their geometries emerge from certain practicalities; common-sense

concerns which, in turn, lend metaphorical power to their forms. The triangular shape of the attic space, the garret, or the 'lumber room' is determined by the pitched roofline of the gabled structure, and the roofline is determined by considerations of environment: the most important of which is shedding water. This simple necessity is so basic that it also evades analysis. The structural considerations of shelter that foster and protect moments of thought are often treated as incidental to thinking itself, but they are, in fact, integral to it. Likewise, a safe, quiet interior space such as an attic is conducive to uninterrupted thinking and the production of metaphorical models.

One could say that in its simplest manifestation the vernacular house takes the form of a triangle placed on a square. Even within architectural discourse, the resulting interior space just below the roofline, the attic, emerges as a forgotten space, an afterthought of construction. This legacy of neglect, this lack of self-conscious maintenance, makes the attic a prime location for an historian or historical archaeologist in search of evidence. As an example of this, in their analysis of Rhode Island Hall (which was in the process of conversion into what is now the Joukowsky Institute for Archaeology), archaeologists from Brown University explored the attic space of the structure in 2008:

"The hidden space in the attic is one of the more exciting areas of the building, and everyone found it an intriguing space. Now that there were more people, we decided to investigate the closed off space that I had been able to see, but not ventured into before. John Cher-

ry and Chris Witmore explored the space, and recovered some interesting items that they brought into the main space [...] old shutters [...] a corroded chimney cap [...] a drainage basin [...]" (Nuding 2008)

For an historical archaeologist, the attic is a space of great metaphorical resonance, but perhaps more importantly, it is a space where analogical thinking itself is developed and nurtured. Within the private dreamlike reveries of childhood, or within the structured confines of adult cognition, the attic reemerges as a space for the production of metaphor. In the following pages I would like to offer a meditation on the attic as an archaeological object through a brief examination of two examples of such: the attic of the house named 'Arisbe', the home of Charles and Juliette Peirce in Milford, Pennsylvania from 1887 to 1914; and the attic of a home in Whiteport, New York, which housed employees of a nearby group of cement mills and limestone quarries during the last half of the nineteenth century.

## THE UNFINISHED ATTIC OF ARISBE

The impulse to physically visit the Peirce house is an archaeological expression of a contiguous relationship between place and thought mediated through analogy. This impulse could very well be the foundation of pilgrimage itself. By feeling the ground, breathing the air, touching the surfaces of the Peirces' home world, can we be drawn closer to them intellectually? The need to visit and understand locations of cognition or epiphany are well founded, even though, in

general, “[t]reatments of logic and language often are still more place-blind, as if speaking and thinking were wholly unaffected by the locality in which they occur” (Casey 1997, xii). The motive to associate a particular time and place to a certain thought (or group of thoughts) is not to diminish its import, but rather to understand better its metaphorical origins; to possibly broaden and enhance its aspects, to give it contour and dimension. Moreover, the provincialisation of timeless (and spaceless) thinking serves to place the mind in a particular landscape, to impart upon a particular exterior locale a quality of interiority or mindfulness. Historical markers come close to this, when they inform the (embodied, walking) reader that a particular historical personage resided herein, but until we see plaques dedicated to particular disembodied thoughts or sentiments, this kind of assignation will have to occur in the confines of transportable texts, or from word of mouth discussion. The progression of thought within the experience of landscape is a mysterious phenomenon, and even somewhat musical, as observed by Peirce: “Thought is a thread of melody running through the succession of our sensations” (CP 5.395). By visiting the home world of Peirce, feeling and hearing the floorboards under our feet, seeing the light as it pours in through the windows as Peirce himself must have witnessed from time to time, by experiencing the “succession of our sensations” within Arisbe, are we also not coming closer to the melodic thread within Peirce’s thinking?

Although even quite recently archaeological texts have attempted to reinforce the assertion that archaeology is “most preoccupied with what is underneath us” (Dobraszczyk

2015, S27), an analysis of standing structures falls well under the purview of archaeological research. One can investigate standing structures stratigraphically, as if they are underground, as demonstrated by the work of historical archaeologists and folklorists such as Henry Glassie (1975) and industrial archaeologists (Palmer & Neaverson 1998). While the stratigraphy is of a different kind, there is a way to apply the same concept to structures: “[T]he technique is a useful one in trying to be as objective as possible in the analysis of a building but a new definition has to be found for a ‘context’ or ‘stratigraphic unit’” (Palmer & Neaverson 1998, 97).

The archaeological approach also informs preservation efforts, as expressed by Batcheler in the Historic Structure Report of Arisbe:

“The park maintenance and interpretation staff should adopt a continuing ‘archeological’ awareness. When any work is done, above ground or in the ground, a very watchful eye should be kept to photograph, sketch, measure, salvage and catalogue, and generally record any data which is uncovered. In the ground the position of garden walls, paths, or utility features may be uncovered. In the house old wallpaper is likely to be found back of the surface-mounted wood trim, mantlepieces, etc. Any wallpaper should be photographed and retained in place if possible.” (Batcheler 1983, 95)

While finished spaces of construction offer evidence of intentional display and concealment, a peculiar feature of the material world of builders is that their own homes are often



**Figure 1.** Attic of Arisbe, the Peirces' house. Milford, Pennsylvania. *Photo by Jeff Benjamin.*



never finished. I would speculate that this is because they are quite comfortable living in the ‘bones’ of a house – the material substance of construction is, after all, a familiar sight for a builder. Moreover, for a builder, a finished house is a metaphor for a finished life. For this reason alone, tarpaulins cover roofs for years, windows are installed but never trimmed, doors are hung with no baseboard to meet them. The necessities are completed, but the details are left hanging, enjoying a perpetually half-hearted approach. It would seem that Peirce understood, like most builders, that it “is better to live in a state of impermanence than in one of finality” (Bachelard 1969 [1958], 61).

Within the space of the unfinished attic of Arisbe we can draw closer to Peirce’s experience of his own home, because this is one part of the house which has not been extensively modified since his death. One can still see the cut and scribe marks on the boards, the nails, the hastily sawn and assembled studs and rafters (Fig. 1). The veneer of wall finish has not been applied, nor have there been any significant structural changes since it was constructed with Peirce’s directions, and possibly with Peirce’s own labor. The third floor and attic space of the house was conceived by the Peirce’s as a way to make the house more attractive to potential visitors and buyers, and it is possible that the third floor was even initially planned as a ballroom (Tuttle, in Batcheler 1983, 136). There is also an apocryphal tale suggesting that Peirce used the attic as a hiding place from creditors (Corrington 1993, 91), as well as suggestions that he wrote some of his works in his attic. This latter possibility is of great interest in the context of this present research, and although it remains

in the realm of speculation until testimonial evidence of Peirce’s working habits emerge to confirm or deny it, this very mode of inquiry (one could call it a ‘hunch’) is one that was endorsed by Peirce himself, and which has increasingly found purchase within archaeological thought (Marila 2017, 67).

Construction notes show that Peirce “drew up a contract for a third story ‘constructed as a balloon-framed structure...’” (Peirce, as quoted by Tuttle in Batcheler 1983, 136). The balloon frame system of construction required less structural redundancy, no mortise and tenon joints, and employed a basic unit of construction, the two by four. This standardised form of construction, ubiquitous in contemporary wood frame construction, was introduced in the 1830’s (Rosenberg 1975, 44). During our tour of the house we were asked to not walk through the unfinished attic space, but this was not a serious problem, because one could see right through it. It was this unfinished quality of the space that brought us closer to the absent figure, the zero sign of Peirce the man. We were looking at the structure as it was left by the Peirces, with very little modification.

In his attempts to define and clarify his own particular form of pragmatism, and to distinguish it from other concurrently arising modes of thought (such as the work of William James), Peirce refers to himself on numerous occasions as a backwoodsman: “I am, as far as I know, a pioneer, or rather a backwoodsman, in the work of clearing and opening up what I call semiotic, that is, the doctrine of the essential nature and fundamental varieties of possible semiosis” (CP 5.488). This assertion could be quickly dismissed as non-literal: Peirce was not in fact a New Jersey/Penn-

sylvania lumberjack. However, it should be noted that Peirce's neighbor and perhaps his closest friend while living in Milford, Pennsylvania, was Gifford Pinchot – considered to be the founder of American forestry and the first leader of the conservation of the country's natural resources. It is impossible that Peirce could have been unaware of Gifford's inclinations and accomplishments, and he certainly must have learned a great deal about the American woods from him, the processes of lumbering as well as conservation, and the value of wood as a resource. President Theodore Roosevelt singled out Pinchot as "the man to whom the nation owes most for what has been accomplished as regards the preservation of the natural resources of our country" (White 1957, 10). The relationship between Peirce and Pinchot was close, and the fact that Charles and Juliette Peirce are buried on a plot of land owned by Pinchot is significant.

I would like to propose that Peirce's self-identification as a backwoodsman is, in fact, slightly more than metaphorical in the sense that the sensory richness, the diversity, the complicated formal visual and sensory abstractions immanent in the environment of the woods house structure might impart upon thought or thinking similar complications and even 'branching' structures that relate to forest and framing patterns. It can be no accident that Peirce's thought provides the theoretical foundation for Eduardo Kohn's (2013) recent book *How Forests Think*. Moreover, the process of wood construction itself, as both a goal and result of "clearing and opening up", was an activity with which Peirce was very familiar. Considering his financial situation, it is quite possible that Peirce did a fair amount

of work on Arisbe himself. Peirce's knowledge of building practice is corroborated by his written notes concerning the different stages of construction on this house. In her report for the National Park Service (inheritors of the house of Juliette and Charles Peirce in 1971), Penelope Batcheler states that "Peirce [...] obviously knew something of the practical aspects of building" (Batcheler 1983, 45). In the same document, which is an incredible record documenting a complex triadic relationship of interrelating actors (man–woman–house), Peirce makes light of his own carpentry skills:

"Really, a person who knows so little about building as Mr. Peirce, ought not to attack such a problem, unless he should be gifted with far greater talent than Mrs. Peirce can boast, or unless he has the advantage of advice from a competent architect or builder." (Peirce, as quoted in Batcheler 1983, 11)

The expansive spatial evolution of the Peirce house in Milford, Pennsylvania (which began as a simple farm house and which can also be considered an agentive actor within the wider context of the development of Peirce's thought) is not an aberrant phenomenon. It follows its own internal logic, one which is consistent with 'living' buildings (buildings with human inhabitants) in general:

"There is a universal rule – never acknowledged because its action is embarrassing or illegal. All buildings grow. Most grow even when they're not allowed to. Urban height limits and the party walls of row houses, for instance,

are no barrier. The building will grow into the back yard and down into the ground – halfway under the street in parts of Paris.” (Brand 1994, 11)

The Batcheler report is filled with the pathos of the mundane, the day-to-day, domestic existence of a couple engaged in a construction project which takes over their lives. The maxim ‘all buildings grow’ is evidenced by the fact that even after Charles Peirce’s death, Juliette added another “ten to twenty more rooms at the back, probably to increase its value to some prospective buyer as a summer hotel” (Tuttle, in Batcheler 1983, 137). It is important to note that it was during the years of living in and working on this house that Peirce did some of his most important work. Within this rural setting, and surrounded by the constantly evolving forms and processes of house construction, Peirce wrote many of his texts which were apparently beyond the full appreciation of the academy at the time. Seemingly satisfied with his rural existence, Peirce refers to himself as a “bucolic logician” (Tuttle, in Batcheler 1983, 131).

Upon visiting the Peirce house – seeing, hearing, feeling, smelling the material forms of the Peirces’ home world – it becomes difficult to separate the structure from his philosophy. This would suggest that philosophical thinking and wood construction are commensurate processes, and that they possibly offer profound ‘metaphorical services’ to each other. Peirce makes this relationship quite explicit, revealing a deep respect for carpentry that is likely borne of experience:

“When a man is about to build a house, what a power of thinking he has to do

before he can safely break ground! With what pains he has to excogitate the precise wants that are to be supplied! What a study to ascertain the most available and suitable materials, to determine the mode of construction to which those materials are best adapted, and to answer a hundred such questions! Now without riding the metaphor too far, I think we may safely say that the studies preliminary to the construction of a great theory should be at least as deliberate and thorough as those that are preliminary to the building of a dwelling house.” (CP 6.8)

The backwoodsman identity which Peirce embraces was alive and well in rural Pennsylvania in real form, and in order to make such a dramatic urban to rural transition, one must be willing – to a certain extent – ‘go native’, and this Peirce certainly does, at one point remarking that his days were filled with the “menial offices of every day in a household, especially a primitive household – the hewing of wood and the drawing of water and the like” (Tuttle, in Batcheler 1983, 130). Peirce’s obvious respect for the intellectual deliberations of a mere carpenter suggests the possibility that the construction of complex philosophical systems and a country house can occur simultaneously. This, of course, challenges a long tradition in Western thought that places the act of physical work, work of the hands, even work itself, as less dignified and less worthy of respect than theoretical efforts that require no action whatsoever (Tilgher 1958 [1930], 8). Peirce’s willingness to embrace the habits and customs of rurality, while demonstrably conducive to the creation of his greatest works, likely also contributed to his increasing social isolation.

The ambition of analogy and metaphor is to posit or suggest the existence of traversable paths between disparate realms: paths that are the result of creative effort. In this sense its project is similar to semiotics, a creative act of forming connections between separate entities. Gentner states that the fundamental process behind analogical thinking is mapping (Gentner 1998). Although not explicitly stated, it was probably not lost on the author that to attempt to explain analogy through mapping is to use an analogy to explain analogy. When we analogize, we are not literally creating or reading a map. Gentner's explanation of analogy as structure mapping introduces a relational interplay between two entities: the base or source domain and the target domain. The source domain (in the case of Peirce's analogical statement, the backwoodsman) is the structure or system that is more familiar or has more robust experiential support, while the target domain (semiotics) is the entity which is being placed in a relationship with it, and which is less familiar. According to Gentner the formation of analogy depends upon embodied, context-specific experience that happens as one initially learns about an entity, a sensory encounter. The movement is from concrete sensory experience, through analogy, to the abstract. This is a fundamental process for learning in children as well as adults, for it is through this process that human beings create the abstract relational concepts that are central to human cognition. Analogy is a "relational mapping between two systems" that demonstrates a "one to one correspondence between elements in the base and elements in the target", there is a "transferability of relational structure" (Gentner 2017). In this manner, they can be superim-

posed upon each other, and when this happens, similar features 'stand out' and become more prominent. The process of analogy is to move from sensorimotor concepts (experience) to abstract concepts, and prior experiential knowledge of either the source domain or the target domain influences the potency of the analogy. However, and quite significantly, it should be noted that analogies are most effective when neither the source nor target domain are over-determined, when there is some sense of mystery within both (Flusberg 2017).

These discussions of what analogy is and how it works are crucial for a self-critical archaeology, if only for the simple reason that metaphors influence reasoning (Flusberg 2017). The interplay between source and target domain that is characteristic of the structure-mapping dynamic is crucial for the formation of inferences, and even though we may try to insist on the empirical basis of archaeological thought, it is a somewhat speculative and inferential science. For this reason, it is important for archaeologists to monitor the metaphorical content of their discourse. Much archaeological debate hinges upon the use of metaphors; whether an analogy or metaphor is appropriate in specific cases.

## **WORLD ON WORLD: THE MINIATURE ARCHAEOLOGIST**

"Lastly, we always go up the attic stairs, which are steeper and more primitive. For they bear the mark of ascension to a more tranquil solitude. When I return to dream in the attics of yesteryear, I never go down again." (Bachelard 1969 [1958], 26)

A series of children's stories by Mary Norton, *The Borrowers*, concerns a family of diminutive humans who 'borrow' domestic items from the material excesses of the full-scale humans who live above them, thundering around above the floorboards (Norton 1953). Just as we borrow structural and systemic maps from disparate sources in the creation of analogy, this diminutive family, The Clocks, appropriate discarded forms from the beings that are similar to them, just monstrously proportioned. The story takes a dramatic turn when the father of the family, Pod, and his daughter, Arrietty, cross a potentially lethal threshold: they are discovered by the gigantic humans above. Instead of emigrating to the country and finding refuge in the burrows of badgers and moles – as the other Borrowers facing similar situations have done – the Clocks decide to try to stay in the house. It is during this time that Arrietty has her first experience of the outdoors, her response to this experience is to remark that it "seemed too big for thought." "Another world above", she thinks, "world on world".

The superpositioning of one's personal experience and understanding of life upon a lesser known entity – in this case the 'target domain' of archaeological inquiry – creates a 'world on world' dynamic with similarly dramatic results. To continue thinking about analogy through analogy, we can easily see how *The Borrowers* is an apt metaphor for the work of historical archaeology. Not only do historical archaeologists and *The Clocks* share a similar predisposition towards the small, forgotten, everyday items of quotidian existence, we can also posit a comparable scalar relationship between the domains of each. In other words, the historical archaeol-

ogist is much smaller than the object of his or her research. While working in the field, the historical archaeologist may very well stand above the excavation trench looking down into it, but on a more existential level, he or she shares space beneath the floorboards with The Clocks, peering upwards and waiting for objects to fall through the cracks. This leads us to suggest a small but important modification of Gentner's model of structural mapping: that the source domain of analogy and metaphor – personal sensory experience – is, in almost all cases, smaller than the target domain of the unknown realm. Furthermore, for archaeological thought, while the depositional remnants of the historical past are frequently found beneath our feet, their full import and significance looms over us – in skies that are increasingly choked with smog, in increasingly dramatic weather events, in the disappearance of the stars at night, the loss of deep blue. The present climate crisis has effect of infantilizing all, even the most aloof and wizened. For this reason, a serious contemplation of children's experience and ways of understanding their newly discovered worlds are perhaps instructive. Perhaps contemporary adults' experience of climate change, as something "too big for thought" might find analogy in the most simple, ordinary experience of a child in an attic, trying to make sense of the complexly layered machinations of the adult world.

Precious few studies of archaeology and childhood have seen print, but one of the more important works is Jane Baxter's *The Archaeology of Childhood*, published in 2005. Baxter shows how children are often treated as inscrutable or unknowable members of the social body. When they are mentioned at all,

it is often as a way of explaining otherwise inexplicable phenomena, or as 'randomizing' or 'disordering' agents within an otherwise predictable or rational world of adults. One of the categories of artifact that is often ascribed to children is the miniature. Baxter (2005, 47) states: "Artifacts that are miniatures or otherwise representations of artifacts used by adults serve important roles in the socialization of children. These artifacts give children the opportunity to mimic and practice adult social roles and physical tasks." Of course, it is not only artifacts that require the attention of archaeologists, it is the spaces where children enact these metaphorical models, making sense of the world outside. Baxter contests the stereotype that children tend to keep to the outskirts of adult dominated central space. However, this kind of retreat does seem to bear further consideration. Archaeology seeks to uncover what James C. Scott calls, to use another metaphor, the 'hidden transcript', pieces and remnants of past lives that were never recorded by the dominant transcript of control, and this, of course, includes children. Sometimes the hidden transcript is not a metaphor, but an actual written text, hidden within the framing of an historic structure. Children are often allowed a reprieve from adult panopticism, and within these spaces of freedom they create zones of analogous thinking. Children collect and curate objects and, thankfully for historical archaeologists, these collections often remain in the peripheral, forgotten corners of dwellings: under staircases, in the attic eaves. James Deetz's text *In Small Things Forgotten* (1977) could easily be renamed 'In Small Persons Forgotten', due to the general negligence of children as subjects of archaeological inquiry.

In the fall of 2017, I was informed of the imminent demolition of a house in Whiteport, New York (Fig. 2) that was of possible historic interest and relevance to the Rosendale cement manufacturing industry, which was active for most of the nineteenth century. This afforded me the opportunity to take a closer look at the house, which the owners told me was built in 1860. Having some training in dendrochronology, my plan was to take cross-section samples of the structural timbers in the attic and cellar to look for the source and time of harvest. The framing of the house was particularly interesting, since it seemed to reveal a transitional style: one that combined post and beam construction with balloon framing methods. The cut nails used for fastening the wall studs dated the structure to 1860s or earlier. During my work in the attic, and located around both windows on either side of the space, I found what seemed to be a curated assemblage of memorabilia: the cover of a journal and its first and second pages, with repeated words written in faint pencil: "Krug" "Allen" "Sophie" along with German script. On the inside of the cover is written: "Franz Schulz, Merseburg, Pajer, 1850". Along with this journal I found the delicate frame of a parasol, two pairs of girls' leather shoes, a glittering scattering of crushed mica, and an empty can of baking soda from Albany, a city to the north. One can only surmise whether these objects were possessions of some of the original inhabitants of the house, but their presence in the attic space (Fig. 3), and their associations with childhood activities present a situation where it is difficult not to return to one's own childhood, to muse on the possibility that this space was used by children to hide, daydream and explore the world with their imagination.





**Figure 2.** House at Whiteport Rd., Kingston, New York. *Photo by Jeff Benjamin.*



**Figure 3.** Attic of Whiteport House. *Photo by Jeff Benjamin.*

Bachelard's *Poetics of Space* is a positive exploration into the intimacy of the home space, which, in its safety, allows the imagination of childhood unlimited freedom: "Our habits of a particular daydream were acquired there. The house, the bedroom, the garret in which we were alone, furnished the framework for an interminable dream" (Bachelard 1969 [1958], 15). For an archaeologist, in order to explore the common garret or attic space, one must crouch, kneel or even crawl. This act of self-diminution initiates an interesting scalar transition that has the potential of altering the perception of the individual exploring the confines of such a space. Being forced to take on the proportions of a child brings the researcher closer to the experience of childhood, and may very well conjure memories of the researcher's own childhood. As my research at Whiteport is only beginning, I cannot offer more conclusive evidence regarding the nature of the children's experience of this newly industrializing locale in the mid nineteenth century. However, I can offer an hypothesis of a way to enter into their world(s). Children must find ways of understanding and making sense of not only their present day situation and settings, but also all of the conditioning pasts that have brought the present into being. With each successive generation, the burden becomes greater. The childhood experience of industrialization also encompasses the trauma of the pastoral-to-industrial transition. The developmental experience of a single child is, in many ways, analogous to the evolution of the humanity, the development of language and civilization, the trauma of industry.

A recurring character in Norwegian fairy tales is the Ash Lad: an archetypical ne'er-do-well who sits around all day, poking a stick in

the ashes of a fire, while the adults attend to more important business (Asbjørnsen & Moe 1982 [1960]). This is an accurate characterization of the historical archaeologist, particularly when it comes to a study of the early industrial era. As far as I know, in the many ash lad stories there is no direct correlation made between the actual constitution and structure of the ashes and the problem facing the village in any particular situation, however, it can be inferred that there is something within the ashes, some inferences drawn, some lessons to be learned, which are applicable to the problem at hand.

Of course, the ash lad is from another time. The joy of childhood reverie so eloquently articulated by Bachelard is by no means a universally recognized experience. In the company town of Whiteport, the mill-stones that were once used to grind grain became repurposed for grinding limestone, and the marks of this process are discernible on the stones. This is the transition from the mischievous reverie of the ash lad of medieval agrarian society to the grim tedium of the industrialized ash lad of the Pennsylvania coal fields, the coal sorters: the young boys tasked to sort coal from shale as it slid by through a gravity conveyance system; the tow-path boys and girls, orphans hired to guide the mules as they pulled the canal boats full of coal to New York City, children who were abandoned in the winter and often found freezing under bridges or frozen in the ice of the canal (Gilchrist 1976).

## **POSTSCRIPT: ON DISAPPEARANCE**

Just recently, I paid a visit to the Whiteport house, where I found the likely attic artifacts of a past childhood. As promised, it is

now gone. What is striking about this disappearance is its completeness, its totality. One would think that out of simple courtesy there would remain some kind of spectral outline in the air, some ghostly vapours delineating its form, indicating its past presence. In its complete erasure, the house now occupies my memory as it did for those who inhabited it generations ago. In the process of searching for the house, I looked up into the sky and trees beyond. My only explanation for this act is that a part of me remains in the attic space of this house, where memory and imagination intermingle.

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## REFERENCES

- Asbjørnsen, P.C. & Moe, J. 1982 [1960]. *Norwegian Folk Tales*. Pantheon Books, New York.
- Bachelard, G. 1969 [1958]. *The Poetics of Space*. Translated by Maria Jolas. Beacon, Boston.
- Batcheler, P.H. 1983. *Historic Structure Report. Architectural Data Section. Charles S. Peirce House. Delaware Water Gap National Recreation Area. Pennsylvania*. National Park Service, United States Department of the Interior, Denver, CO.
- Baxter, J. 2005. *The Archaeology of Childhood. Children, Gender and Material Culture*. Altamira, Walnut Creek.
- Brand, S. 1994. *How Buildings Learn. What Happens After They're Built*. Viking, New York.
- Casey, E. 1997. *The Fate of Place. A Philosophical History*. University of California Press, Berkeley.
- Corrington, R.S. 1993. Peirce the melancholy prestidigitator. *Semiotica*, 94(1–2), 85–101.
- CP, followed by number of volume and paragraph, refers to *The Collected Papers of Charles Sanders Peirce*. Volumes 1–6 edited by C. Hartshorne and P. Weiss (1931–1935), volumes 7–8 edited by A. W. Burks (1958). Harvard University Press, Cambridge.
- Deetz, J. 1977. *In Small Things Forgotten*. Doubleday, New York.
- Dobraszczyk, P., Galviz, C.L. & Garrett, B.L. 2015. Digging up and digging down: urban undergrounds. *Journal of Contemporary Archaeology*, 2(2), S26–S30.
- Doyle, A.C. 1890. *A Study in Scarlet*. J.P. Lippincott, Philadelphia.
- Edgeworth, M., deB Richter, D., Waters, C., Haff, P., Neal, C. & Price, S.J. 2015. Diachronous beginnings of the Anthropocene: the lower bounding surface of anthropogenic deposits. *The Anthropocene Review*, 2(1), 33–58.
- Fernald, A.E. 2006. *Virginia Woolf. Feminism and the Reader*. Palgrave Macmillan, New York.
- Flusberg, S. 2017. Presented paper in Seminars in Science and Society: Metaphors and Models. The Center for Science and Society, Dr. Pamela Smith, Director. Faculty House, Columbia University. November 20, 2017.
- Gentner, D. 1998. Analogy. In *A Companion to Cognitive Science*. Eds W. Bechtel & G. Graham. Blackwell, Oxford, 107–113.
- Gentner, D. 2017. Presented paper in Seminars in Science and Society: Metaphors and Models. The Center for Science and Society, Dr. Pamela Smith, Director. Faculty House, Columbia University. November 20, 2017.
- Gilchrist, A. 1976. *Footsteps Across Cement. A History of the Township of Rosendale, New York*. Lithart Press, Rosendale.
- Glassie, H. 1975. *Folk Housing in Middle Virginia. A Structural Analysis of Historic Artifacts*. University of Tennessee Press, Knoxville.
- Gorman, A. 2014 The Anthropocene in the Solar System. *Journal of Contemporary Archaeology*, 1(1), 87–91.
- Kohn, E. 2013. *How Forests Think. Toward an Anthropology Beyond the Human*. University of California Press, Berkeley.
- Marila, M. 2017. Vagueness and archaeological interpretation: a sensuous approach to archaeological knowledge formation through finds analysis. *Norwegian Archaeological Review*, 50(1), 66–88.
- Mecklin, J.M. 1934. *The Story of American Dissent*. Harcourt, Brace and Company, New York.
- Mumford, L. 1955 [1924]. *Sticks and Stones. A Study of American Architecture and Civilization*. New York, Dover.
- Norton, M. 1953. *The Borrowers*. Harcourt, Brace and Company, New York.
- Nuding, E. 2008. An Archaeology of Rhode Island Hall. Attic- John Cherry, Chris Witmore, and myself. [[https://brown.edu/Departments/Joukowsky\\_Institute/about/rihall/6032.html](https://brown.edu/Departments/Joukowsky_Institute/about/rihall/6032.html)]. Accessed May 17, 2018.
- Palmer, M. & Neaverson, P. 1998. *Industrial Archaeology. Principles and Practice*. Routledge, London.
- Rosenberg, N. 1975. America's rise to woodworking leadership. In *America's Wooden Age. Aspects of its Early Technology*. Ed. B. Hindle, Sleepy Hollow Restorations, Tarrytown, 37–62.

- Singer, M.** 1980. Signs of the self: an exploration in semiotic anthropology. *American Anthropologist*, 82(3), 485–507.
- Sullivan, H.** 2014. The Ecology of Colors: Goethe's Materialist Optics and Ecological Posthumanism. In *Material Ecocriticism*. Eds S. Iovino & S. Opperman. Indiana University Press, Bloomington, 80–94.
- Tilgher, A.** 1958 [1930]. *Work. What It Has Meant to Men Through the Ages*. Arno Press, New York.
- Weber, M.** 1905. *The Protestant Ethic and the Spirit of Capitalism*. Dover, Mineola.
- White, D.** 1957. *Gifford Pinchot. The Man Who Saved the Forests*. Julian Messner, New York.

