“How do you know that?”

A study of narrative and mediation at an archaeological excavation site

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Abstract: *The public's growing interest in archaeology in recent years is reflected in increased visits to excavation sites, part of a trend coined in the research as Public Archaeology. Public visits are often sponsored through museum outreach and education programmes for schools and families, offering diverse activities and encounters with archaeologists in the field. Yet there are few empirical studies of archaeologists' mediation practices in these settings and what such interactions may mean for visitors' learning about history and past cultures. This study empirically investigates a museum's archaeological excavation site as a setting for students' meaning making in the subject of history at the upper secondary level (17–19 years old). Interactional data from a school field trip to an excavation site are analysed to explore which archaeological knowledge, narratives, and semiotic resources archaeologists draw on when communicating interpretations of Norwegian history to this learner public. In contrast to developments in archaeological research perspectives over several decades, our analysis identifies processual archaeology as the predominant narrative that archaeologists' draw on in their interactions with the young people visiting the site. We reflect on the implications of this finding in light of the educational aims, which focus on communicating the complex relationship between archaeology and historical interpretations. The overall aim of the article is to contribute to the development of learning perspectives and research methods that may be relevant for museums' educational practices at archaeological excavation sites.*

Key words: Public archaeology, narrative, excavation site, meaning making, museum education, interaction analysis, field trip.

68 INTRODUCTION

Communicating the significance of excavation findings to the public has been part of archaeological practice since its origins in the latter part of the eighteenth century, communicated through different media and contexts. In formal learning settings such as schools, archaeological findings are typically integrated into history textbooks and curricula, while films, newspapers and the Internet are informal modes of communication with the general public. Museums, as informal learning settings, also include documentation from excavation processes in exhibitions of objects and findings from archaeological sites, as seen in the National Historical Museum in Stockholm, the Archaeological Museum of Herne, and the Museum of York, among others.

However, in recent years, there has been a noticeable surge of public interest in archaeology, in a trend that has been coined *Public Archaeology* (Merriman, 2004, Svanberg & Wahlgren 2007). In addition to more visitors physically turning up at excavation sites, the extensive use of social media and digital technology by archaeologists in the field to share 'real time' processes and findings online has resulted in greater exposure and transparency. From an historical perspective, then, these developments represent more direct forms of communication between the archaeological community and the interested public than ever before (Andreassen 2006, Andreassen and Sem 2007).

Through such exposure and transparency, the excavation site has established itself more formally as a space for learning. However, we note that these widespread developments and trends seem to be occurring 'in the field' with little reflection on relations between learning

perspectives, archaeological discourse and museum education in history and past cultures (Ekeland 1999, Merriman 2004, Copeland, 2004). Since archaeologists at museums of cultural history and cultural heritage institutions lead most of the excavations in Norway, there is an inherent link between archaeological research and public exhibitions of material and immaterial cultural heritage. We therefore argue that studies of how archaeological excavations become sites for history learning and teaching for different types of publics are increasingly important in the museology research.

British researcher, archaeologist and museum director Nick Merriman concurs. Merriman claims that scientists have "naïve notions, interests and opinions of their diverse publics," and bemoans the fact that "there have been very few published studies of public understanding and attitudes to archaeology" (2004: 8). This has resulted in more or less blind practices of communication, with little understanding of "what motivates people to take an interest in archaeology, what causes them to be bored by it, or of how people re-interpret and use the materials that archaeologists provide for them" (*ibid.*: 9). British archaeologist Tim Copeland is similarly concerned with a lack of studies of learning and communication, "particularly so in terms of research aimed at understanding public construction on-site" (2004: 137).

It is against this backdrop that we situate a study of archaeological excavation sites as places to teach and engage the public in historical knowledge, with a specific focus on young people (17–18 years old) on school field trips. The study is part of a larger research project that investigates the design and use of digital technologies and social media to

support students' curiosity and interest in archaeological excavations, and to encourage their reflection on relations between the subject of archaeology and historical interpretation. In this article, we have a specific focus on the types of explanations, narratives and dialogues about the past that the young people encounter during face-to-face conversations with archaeologists in the field. The aims of the study are twofold: to empirically investigate the potential of archaeological excavation sites as resources for young people's understanding of history and historical interpretation, and to contribute to the theoretical development of a dialogical perspective on meaning making that may be useful for today's transforming and improving modes of archaeological mediation. In line with Merriman's (2004) call to explore the public's understanding of archaeological discourse, we pose the research question: which knowledge, narratives and other resources do archaeologists at excavation sites draw on to mediate historical knowledge and interpretations to young people, as a learner public?

MEDIATION IN ARCHAEOLOGY

Archaeology is an interpretive science that needs to be mediated to the public in ways that are meaningful to them. The prehistoric societies that are studied cannot be observed directly. There is no given connection between, say, a Neolithic society and our own time. Connections between archaeology and history are instead established through the construction and interpretation of meaningful narratives. In archaeology, theoretical debates revolve precisely around this epistemological theme of how to establish knowledge about the past, and how to interpret material remains (Olsen 1997, 2010). What kinds of claims may be made and which

narratives may be told, regarding different material objects? Significantly, rather than assume objects may be interpreted and valued on their own, archaeologists use language, representations, disciplinary knowledge and other *mediational means* (Wertsch 1998) when describing and explaining findings. In this study, we investigate the mediational means that archaeologists draw on when interacting with 'learners' at excavation sites, with a specific focus on narrative as mediational tool.

Mediation is an important concept and educational practice in archaeology, increasingly acknowledged by and incorporated into the archaeological research discourse. There is agreement that mediation should take place, that the excavation setting is a good arena for mediation (Svanberg & Wahlgren 2007), and that the discipline of archaeology should be more open to the public and to a broader range of interpretations (Copeland 2004). It is nonetheless the archaeologist who produces and mediates an expert narrative about the past and material culture, often for the benefit of other archaeologists and specialists (Ekeland 1998, Merriman 2004, Svanberg & Wahlgren 2007). British archaeologist Chris Tilley critiques this practice:

No archaeologists interpret solely for themselves. Interpretation is a social activity for an individual, a group or an audience. The audience for whom both excavation and site reports are produced is a significant factor. There is something inherently unsatisfactory and elitist about the notion that excavations should be undertaken only to satisfy the specific research goals of archaeologists (1989: 280).

Studies of archaeological mediation conducted at excavation sites have similarly identified important challenges in communicating

70 interpretations to the public (Tilley 1989, Merriman 2004, Copeland 2004, Svanberg & Wahlgren 2007, Andreassen 2006a, b, Celius Rommetveit 2009). Swedish researchers Svanberg and Wahlgren (2007) found public archaeology practices out of date in terms of communicating research in non-expert language that is accessible to the public. They also noted that newer theoretical perspectives in archaeology are not integrated in museum education and outreach. Norwegian archaeologist Torunn Ekeland (1992, 1999) related this problem to the fact that interpretive and narrative traditions in archaeology are often integrated into the broader subject of history, leaving archaeology without a didactics of its own to be critically explored. Representing the learner's perspective, Copeland (2004) proposed that archaeological presentations support a constructivist learning approach that is open to multiple interpretations, using a variety of primary and interpretive sources and taking into account the needs of different publics.

In sum, there seems to be a contrast between the normative view that "the highest consideration archaeologists can have towards the general public, and especially towards the cultural heritage itself, is to disseminate their expertise" (Rommetveit 2009: 81), and calls to empirically investigate the 'what, how and why' of mediation, particularly at archaeological excavation sites (Merriman 2004, Copeland 2004). This study is situated in the latter, applying a sociocultural perspective from the learning sciences to interactional data. Before presenting our theoretical perspective on meaning making, however, we first consider key epistemological practices in the discipline of archaeology, and the ways in which these have been made embedded in interpretative and narrative traditions.

ARCHAEOLOGY'S NARRATIVE TRADITIONS

According to Tilley (1989), archaeological interpretations should be directed as much toward the public as to the community of archaeologists. However, there are questions regarding the *types of interpretations* that are shared with the public. In recent decades, archaeology has taken up different interpretative traditions, reflecting epistemological changes in the discipline. Although similar in terms of being largely chronological narrative accounts of history and cultural heritage (Olsen 1997), these interpretative traditions may be loosely aligned with three different schools of thought for analytical purposes. Wertsch (2002) describes such interpretative traditions as *schematic narrative templates*, i.e. generalised narrative traditions that emerge over time to ground processes of collective remembering.

The first interpretative tradition is referred to as *cultural historical archaeology* (Trigger 2006) and is evolutionistic in nature, focusing on how different sets of archaeological material can be identified with particular cultural groups, and how these groups develop or move around, influencing other similar groups. Epistemologically, cultural historical archaeology is linked with inductive reasoning, and the typological-chronological method (Olsen 1997). This paradigmatic way of doing archaeology was established at the end of the nineteenth century, and was an important schematic narrative template in Western archaeology until the 1950s and 1960s.

Cultural historical archaeology was largely discredited during the Second World War, replaced by a new school of thought, namely the *processual* approach, or *New Archaeology* (Olsen 1997). This approach relied on ecological models and methods in the search

for objective, exact knowledge about the past, with a schematic narrative template characterised by logical positivism, functionalism and the belief that such knowledge was measurable (Olsen 1997, Binford 1968). By the 1980s, however, postmodern thinkers had heavily criticised this school of thought, and French and German philosophy was incorporated into the archaeological theoretical foundation. *Post-processual* archaeology, inspired by structuralism, Marxism, feminism, critical theory and hermeneutics, is thus recognized as a third interpretative tradition. Post-processual narratives emphasise the symbolic, contextual and communicative aspects of material culture, and the humanness in interpretative processes (Olsen 1997). Social media and digital technologies have further advanced post-processual narrative perspectives, with archaeological interpretations understood as open to a multitude of voices (Ekeland 1999, Olsen & Svestad 1994).

In sum, we propose that these three traditions of interpreting archaeological material, and the prehistoric societies that once produced it, may be traced as *schematic narrative templates* in archaeological discourse today. At the same time, we want to emphasise that these distinctions are made for analytical purposes rather with the aim of providing an exhaustive account of theoretical perspectives in archaeology. Several important trends fall outside the scope of our necessarily reductionist account, including recent theoretical perspectives coined as the 'material turn,' or symmetrical archaeology (Olsen 2010), which has once again directed attention to the material world and a return to the meaning potential in things "in themselves" (*ibid*: 172). Our selection of interpretive traditions in archaeology has been informed by studies in

previous research (Olsen 1997), but also by the data collected in the empirical study we present in this article. In the next section, we outline a sociocultural perspective on the role of such narrative traditions in meaning making processes, which is the theoretical perspective on learning that frames our study.

A DIALOGICAL PERSPECTIVE ON NARRATIVE AND MEANING MAKING

As discussed above, narrative is an important tool of language when interpreting and mediating the past in the archaeological community. However, as Wertsch (2002) points out, the function of narratives involves more than simply referring to settings, actors and events in history. From a meaning making perspective, narratives are cognitive tools for organising understandings of the past (Bruner 1990), making it possible to combine "temporally distributed events into interpretable wholes or plots" (Wertsch 2002: 58).

In other words, Wertsch (2002) marks an essential difference between what he calls narrative production and narrative consumption, arguing for what he terms the "dialogical function" of texts, narratives and other cultural artefacts and semiotic spaces (2002: 59). He marks a distinction between narrative texts and the intentions of their producers on the one hand, and the dialogical function of narrative *in use*, as a cultural tool, on the other. In understanding narrative as a cultural tool that people may master – but also choose not to appropriate – the public are endowed with an agency in meaning making that is not found in behaviourist and constructivist theories of learning.

This sociocultural perspective (Vygotsky 1986, Wertsch 1998, Pierroux 2006) on

72 narrative may seem radical in view of the monological, transmission model that has dominated learning perspectives and structured the discourse of communication in Western culture (Dysthe 2001). A dialogical perspective, in contrast, situates meaning *between* speaker and listener, emergent in the expressive and situated aspects of utterances, rendering meaning production a social rather than individual process (Dysthe 2001, Rommetveit 1996). Drawing largely on Russian theorist Mikhail (1986), this view holds that each utterance also reveals something about the speaker, and his or her particular angle or worldview (Dysthe 2001), in that people draw on communicative genres – such as schematic narrative templates – that are contextually developed. Therefore, to understand the dialogical function of narrative in context, there is a need to study, through analyses of social interaction, not only the worldviews in the narratives produced but also how these may or may not be taken up in people's meaning making processes.

At excavation sites, archaeologists communicate through language, artefacts and other semiotic tools, relating findings from the field to disciplinary knowledge – that is, archaeological interpretations of historical developments published in research journals (Ekeland 1999). As described above, we have for analytical purposes identified three such main schools of thought or schematic narrative templates. And it is through language that individual thought becomes linked with cultural resources like narratives, providing us “with a means for thinking together, for jointly creating knowledge and understanding” (Mercer 2000: 14-15). This notion of language as the most important of all psychological tools for intramental and intermental functions is based on Vygotsky

(1986), and is central to sociocultural perspectives on meaning making. In keeping with the developmental perspective on psychological processes, language forms an inherent and dialectical relation between intermental and intramental planes, with permeable boundaries between social and individual functioning: “Social relations or relations among people genetically underlie all higher [mental] functions and their relationships” (Vygotsky 1981: 163).

In addition to language, sociocultural analyses of informal and formal learning settings include *semiotic resources* like pointing, gesturing, and referencing the physical environment – including material artefacts – as means of creating joint attention and mediating shared understanding (Goodwin 1997, Roth 2001, Steier & Pierroux 2011). As sociocultural perspectives have been increasingly taken up in museum learning research, studies of conversations have also identified the significance of prior knowledge, motivation and identity for informal learning, particularly in groups (Leinhardt & Knutson 2004). Interest may be defined as a psychological state that develops in different stages, but generally refers to a liking, preference or engagement with a particular content, in a given context, at a particular point in time, both individually and in groups (Valsiner 1992, Renninger, 2009). On school field trips, which bridge informal and formal learning contexts, these aspects of *interest* are often strongly framed by the institutional context, such as worksheets, assessment and control issues (DeWitt 2008, Mortensen 2007). In this study, we draw on this concept of interest in the analysis of talk, material tools and group interactions in the excavation setting.

RESEARCH DESIGN

The study presented in this article is part of a larger research project conducted in spring 2011, which involved two teachers and three classes at a Norwegian upper secondary school. The teachers were recruited based on prior collaboration between their school and InterMedia researchers in other projects. Ethnographic observations of the three different history classes were first conducted to better understand existing patterns of interaction between students and teachers, and to become familiar with the textbook use and classroom resources. A questionnaire was also distributed to the students to gain insight into their interests in archaeology and their use of social media in learning activities at school. Several meetings were held with the teachers during a six-month period to plan and develop the tasks, activities and disciplinary content and resources. These meetings ran parallel with the development of the pedagogical design and technology platform. Due to teacher-related practical reasons, one class was ultimately selected to participate in the study, which took place over a three-week period toward the end of the school year.

The first activity was a lecture by the researcher (first author), who is also an archaeologist, on the topic of the agricultural revolution in Norway and archaeological perspectives on this theme. The topic was linked to the curriculum and based on input from the teachers. An audio recording was made of the lecture. The following week the class travelled by bus to an excavation site approximately three hours away. A total of fourteen students (17–18 years old) participated in the field trip, along with one teacher and four InterMedia staff.

The students were instructed to visit three different stations that had been arranged beforehand for the study: documentation/methods, findings and interpretation. At the excavation site, five archaeologists met with students at the three different stations, while the remaining archaeologists worked on their ordinary tasks in the background. The archaeologists participating in the study had been instructed to talk about the particular topics selected for each station in an open, reflective and inquiring manner. Through talks between researcher and archaeologists beforehand it was made clear that the learning design of the project aimed at a high degree of student involvement, to guide them on a quest to understand how archaeological knowledge production was relevant for historical interpretations. The students' tasks were to collect information using mobile phones and notes that would allow them to complete a field report which included an interpretation of how, why and when farming emerged in the southern part of Norway.

Two student groups were selected for filming, and one researcher followed each group from station to station with a camera throughout the day. One student in each group wore a wireless microphone. In addition, still photographs were taken. The primary empirical material for the study presented in this article thus comprises seven hours of video recordings and field notes from the site visit. Classroom observations, audio recording and questionnaire responses serve as secondary data.

ANALYTICAL APPROACH

Methods from interaction analysis (Jordan & Henderson 1995, Derry et al. 2010, Pierroux 2005) are applied to the selection of video

74 data for this study, which focuses on interactions between archaeologists and students at the excavation site and how these relate to teaching and learning history as disciplinary domain. After repeated viewings of the video recordings by the researchers, excerpts were selected and transcribed for closer analysis based on their relevance for the research aims; to explore the ways in which narrative and disciplinary talk emerges in interactions between students and archaeologists in the field. The excerpts contain talk of archaeological methods, findings and interpretations, and are thus relevant to our investigation of archaeological narratives and their dialogical function.

We focus on the *situatedness* of the data and language use (Mercer 2000) – how archaeologists use language and other semiotic systems such as gesture and tools in their communication with the students. Excerpts from the video recordings are selected where there is activity, where narratives come into play, where the students ask questions, and where we preliminarily could identify turn-taking and shifts in the conversation that related to the research questions. As we are interested in specific and context-dependent interactions as they unfold, concrete examples were selected to look “inside” the data rather than coding a larger quantitative sample material to identify patterns of talk. In a sociocultural approach to interaction analysis, the crucial issue or question is not generalisability of the study, but rather the generality of claims that can be made within the study (Wood & Kroger 2000: 69–81), which in this case centres on implications for archaeological field mediation and museum education practice.

The excerpts are taken from observations of

Fig. 1. Archaeologists showing students a map at ‘methods/documentation’ station (video still from data).

a student group that called itself ‘Mealtime’ and are from two different stations. The group consists of four male young adults, 17–18 years old: Zamir, Imran, Axel and Amir (aliases are used for all participants).

EXCERPT 1. MEASURE IT UP

In the first excerpt, we enter into a discussion at the methods/documentation station, where the archaeologists (Anne, Lisa and Eric) are explaining how one excavates an area of the ground (Fig. 1), and whether one should choose to excavate diagonally or vertically.

1. Zamir: But why does one use specifically that method for Stone Age things, or excavation (indicating the ground below with his hands)?
2. Anne: Why does one use specifically that method?
3. Zamir: Yes!

4. Anne: It is because one sees it quite easily on the surface when one (makes a type of scraping off movement with the one arm) gets over, no, once one has removed the turf and topsoil.
5. Zamir: Yes
6. Anne: So one sees quite easily here (shows a circular movement with her hands) that there has been something here. Then one has to document, take pictures (shows, counts on fingers) aaaand write a little about it, and measure it up (shows with a pointing movement the measurement device/total station) with the measure – measurement equipment that we have here. Also, uhm... one cuts it up (shows a cutting movement with her arms) at the end, then, it is simply cut in half, and we excavate the one side, and then one also sees the shape (illustrates with her hands). Quite often, uhm, that is how we, uhm, excavate it.
7. Zamir: (simultaneously with Anne) OK, mmmh. (Axel taking notes the entire time)
8. Anne: But we also have something called stratigraphy. Do you know what that is? No?!
9. Zamir: No
10. Anne: Then we excavate the different layers (shows the thickness of an imaginary layer with her fingers). Such as, for example, what I just showed you.

ANALYSIS OF EXCERPT 1

In this excerpt only Zamir and Anne are talking, while the other students, as well as the archaeologists Lisa and Eric, listen. In addition, Axel is taking notes. In line 1, Zamir asks Anne why one necessarily uses precisely the method

that she has just described for a Stone Age excavation. The method is called surface stripping, and was mentioned in the conversation a couple of minutes previously. Anne explains how this method can reveal clues in the surface – at one level, and then goes on to saying that one has to document what one has done before one continues to divide something into two (line 5 and 6), to be able to see the shape (line 6). What one is supposed to see the shape of is not explicitly mentioned, but rather she mentions something as 'it' (line 6). Then she asks the boys whether they are familiar with the concept of stratigraphy (line 8). Zamir responds that he is not (line 9). Anne then proceeds to explain how one can excavate away layers of something one at a time (line 10).

In this excerpt, the exchange is triggered by Zamir's interest and curiosity question (Azevedo, 2006, Renninger 2009). However, we see that it is primarily the archaeologist Anne who does most of the talking. Her statements are acknowledged by Zamir's periodic confirmations, and the others attentively follow along. The excavation technique is the theme at first, shifting to issues of documentation (line 6), before Anne returns to the subject of technique. In this excerpt, archaeological knowledge *per se* is not discussed. Rather, in keeping with processual approaches, the focus is on how to acquire and document knowledge. The relationship between the manner in which one acquires knowledge, and what type of knowledge one may establish about the Stone Age, referenced by Zamir in the initial question, is not problematised. A very precise methodology is outlined, describing what is done to be able to see something, either vertically or horizontally. This 'something' is named further along in the dialogue as structures in the ground, i.e. postholes, coal pits, cooking

76 pits or fireplaces. It is clear that archaeologists are looking for something specific, and that thorough methods are employed, including comprehensive technological equipment that Anne refers to when she talks about "measuring it up," pointing to the GPS equipment (line 6), among other tools. This is large, expensive and high-tech equipment that characterises both the structure of the excavation field and the visual field of the students.

EXCERPT 2. JIGSAW PUZZLE

A bit later in the conversation, after they have talked about the excavation method, the archaeologists switch to talking about documentation. Eric explains how the surveying system functions with co-ordinates and such, and how one understands and interprets the maps that are produced. They talk about how this type of map can assist archaeologists in choosing where they should or should not dig, and they move on to speak about samples and sieving the soil. The group moves from standing at the station, continuing to talk as they walk towards the platform where other archaeologists are sieving their buckets of excavated soil.

1. Eric: We have not talked much about samples
2. Anne: No
3. Eric: But it is something that we will fill in the picture with, but let's talk about it while we are walking down. Samples, we take lots of samples, and reasons include determining how old all this actually is. We can use something called C-14 dating. Or what we call "carbon 14". (Group begins to walk from excavation locality to sieving station.)
4. Zamir: Mmm

5. Eric: This concerns measuring how much of a radioactive isotope there is in organic material, for example. You have right now (puts hand on Imran's shoulder while they walk) ... because this radioactive isotope is in the air. You breathe. You have 100 per cent carbon 14 in your body. If you died now and laid here for 5730 years, then you would have fifty per cent left. And that means that if you find a, an animal bone, that has only that half of it remaining, then we are able to know, to ascertain... when it was that it died. So you can compute how old the animal, how long ago the animal died. And that is how we, for example, date inhabited sites and other things. And then we use many other samples, uhm,... for example, pollen samples to determine what type of vegetation was here at that time. Well... overall then, it is quite a composite jigsaw puzzle.
6. Anne: Yes. Everything is a jigsaw puzzle. Would you like to see how they sieve the soil that they dig up?
7. Zamir: Yes, I'd love to!
8. Zamir: Is it exciting? (asks Imran while they are walking together up to the sieving station)
9. Imran: A bit actually.
10. Zamir: That's pretty cool then.
11. Anne: It is just like panning for gold, but you are looking for stones instead.
12. Zamir: Imran, do you have a camera?
13. Imran: Yes
14. Zamir: Take a picture!

ANALYSIS OF EXCERPT 2

In this excerpt, Eric, Anne, Zamir and Imran move from one excavation site to another. They arrive at the sieving station where archaeologists

are standing and sieving and sorting what they have dug up. Eric starts by saying that they have not said particularly much about samples so far; but that this is something that one makes use of in archaeology *to fill in the picture* (line 3). Samples are the primary theme, which gradually turns to an explanation of the C-14 dating method and what it is used for. Eric uses one of the students as an example, explaining how his remains could be dated in precisely the same manner as any other organic archaeological material (line 5). The method is explained quite straightforwardly, without any form of problematising. Eric also mentions other methods such as pollen samples, and says that one is using the methods to solve a jigsaw puzzle (line 5). Anne agrees with this metaphor (line 6), and she asks if they would like to see how one sieves the excavated soil (line 6). The boys respond enthusiastically 'yes' (line 7), and there is an interaction between the students at this point, when Zamir asks Imran whether what he is doing is exciting (line 8), and Imran confirms (line 9). Anne enters the conversation and uses gold panning as a metaphor for what the archaeologists are doing, only with stones instead of gold (line 11). Zamir asks Imran about the availability of a camera and instructs him to take a picture (lines 12–14).

Initially, it may seem as though scientific tests are the subject of this excerpt, as this is what the archaeologists are describing and focusing on. However, at both the start and end of the excerpt there is also talk of a picture and a jigsaw puzzle to be filled out in some way, suggesting that it is archaeological knowledge on a more general level that they are discussing. Knowledge production and interpretation are implicit, as something given, which may be solved like a puzzle through meticulous and rigorous scientific work. The archaeologists are

searching for something quite specific, and, as in the processual narrative template (Olsen 1997), all pieces of the picture must fit to form a scientific interpretation. The archaeologists, Eric and Anne, support each other when this perspective is voiced (line 1 and 2), and make points using similar types of argumentation. The students are an attentive, but relatively passive audience, facilitating the archaeologists' discourse through their acknowledging utterances.

However, Anne's invitation to observe the sieving work carried out by other archaeologists (line 6) clearly triggers the boys' interest, and they remark to one another that this is exciting. The archaeologist's comparison of sieving activity with panning for gold reinforces the perspective that this is where magic happens. This is when archaeological items come into view, and Zamir is interested in accurately documenting this process (line 7 through 14). Implicit in Anne's analogy is the notion that it is at this juncture when correct and incorrect interpretations, or puzzle answers, are made. To the trained archaeological eye, objects from the past appear differently from natural things, such as soil, stones and roots. The goal is to find the gold, in this case stones (line 11), to fill in the picture in a correct manner. The fact that archaeologists make errors by overlooking things or perhaps not fully knowing what to look for is not addressed.

EXCERPT 3. A GOOD QUESTION

The group then walked to the 'findings' station, the final station for the activity, where they were to learn about archaeological findings. The archaeologist, Christian, had set up a table in the forest with different types of objects arranged on it (Fig. 2). Most of the

Fig. 2. Archaeologist and students at 'findings' station (video still from data).

objects were findings from this excavation, but some were reconstructions of objects from the Stone Age, both older and younger. The archaeologist asked the students what people would need for different activities, in this case hunting, and the boys said that one needs tools and weapons. Christian showed them an arrow, and when asked by one of the students, told him that it was a copy. Christian referred a number of times to how things had been in reality, or how it actually had been for people living at this time. He mentioned the relationship between material remains, or the 'clues' that are found today, and the material world that people were part of during the Stone Age. At an excavation, archaeologists discover only a small part of the material surroundings from people who lived in the Stone Age, because all organic material has rotted away and stone, or flint, is all that is left.

1. Zamir: You said that hides and, uhm, such things often rot, don't they, but they probably lived in hide tents and such...
2. Christian: Yes
3. Zamir: ... tools of hide and such things, how do you know that? Have you made any findings? Or?
4. Christian: Yes! That was a good question. There are, uhm, there are of course only remains, uhm
5. Zamir: mmm
6. Christian: How do you know that, is what you asked.
7. Zamir: mmm, yes!
8. Christian: So that is part of what is so much fun about archaeology. That is, one can never be completely certain. So what is kind of cool about it, at least in my view, is that it is not so easy to figure out what is actually true. So if I want to know what you did last week (nods at Imran), I could just ask you.
9. Imran: Yes (nods)
10. Christian: And you would probably remember, but, uhm, what people did in the Stone Age, it's not so easy to ask them about it.
11. Imran: No
12. Christian: Because there's nobody who can answer. So it actually comes down to just what we archaeologists think is correct, but that can change over time. It may be that archaeologists will come along ten years from now who have different methods, uhm, new methods of finding things out with. Which might provide still better explanations for things.

ANALYSIS OF EXCERPT 3

In this excerpt, Zamir picks up information

about the rotting of organic material and begins to formulate a question (line 1). Prompted by Christian (line 2), Zamir asks if hides and the like have rotted away, how *you* (archaeologists) could know about objects such as tools that had been made of these materials, and whether they have actually made any such finds (line 3). Christian states that it is a good question (line 4), and takes some time to confirm and reformulate the question (lines 4–7). He then turns the talk to a broader reflection on what one can or cannot know anything about as an archaeologist (line 8), comparing knowledge we can have about the remote past with more certain knowledge we can have about something that has only recently taken place (lines 8–10). He uses one of the students to illustrate what he means. One can ask people living today about what they did last week, but it is impossible to ask anyone with first hand knowledge about what people did in the Stone Age (lines 8–10). He concludes that archaeological knowledge is uncertain – it is what archaeologists *think is correct* that matters – but that archaeologists may in the future have methods that give better explanations (line 12).

In this sequence, the student's curiosity appears to have been triggered by the archaeologist's previous utterances. Zamir's curiosity question 'how do you know that?' represents a clear break with the archaeologist's processual narrative. It is at this point that the archaeologist introduces uncertainty and the possibility of multiple interpretations in historical knowledge, a way of thinking characteristic of post-processual approaches in archaeology. However, as described in the introduction to this excerpt, Christian used the phrase 'in reality' to describe how people lived, followed by references to 'correct interpretations'

and suggesting the possibility of objective knowledge about an original pre-historic reality. In other words, the archaeologist allows some latitude for interpretation, but does not elaborate on how multiple explanations may exist simultaneously for the same find, or the same period. Rather, he seems to say that while we could be wrong today, others may come after us with better explanations that will lie closer to the *reality* of the past. The key to correct interpretations depends on developing the right methods.

DISCUSSION

In this section we summarise the analyses of the three excerpts in a discussion of the knowledge, narratives and other resources archaeologists at excavation sites draw on to mediate historical knowledge and interpretations to young people, as a learner public. We examine the types of knowledge that are mediated through different narratives and semiotic resources, and how meaning making unfolds through interaction between students and archaeologists. We conclude by reflecting on how this research may be relevant for understanding today's transforming modes of archaeological mediation at excavation sites, as part of museum education.

Based on analysis of the entire corpus of video material we first note that, with a few exceptions, the archaeologists do most of the talking, and that students' contributions are mainly limited to brief acknowledgements of comprehension or utterances that maintain conversational flow. This is a pattern familiar from research on the organization of talk and interactions in classrooms, known as an IRF or IRE structure (Sinclair & Coulthard, 1975, Mehan 1979). This sequence involves the teacher Initiating talk, to which the student(s)

80 Reply, with Follow-up or Evaluation by the teacher of what the student(s) said. This 'classic' sequence of teacher–student interaction is not necessarily negative or a less valuable way of organising verbal interaction, but as Mercer (1995) points out, it may constrain the contributions of students.

Overall, then, analysis of the discourse and physical resources used by the archaeologists at the excavation site shows a strong similarity to a traditional classroom context. The rich semiotic potential of the physical environment and the excavation site is largely underutilised as mediational means from the perspective of the educational aims: to use archaeological excavation sites as resources for young people's understanding of history and historical interpretation. The excavation site is a potentially intriguing and exciting mediational means for students to develop perspectives and understandings of history that differ from or supplement what they learn in the classroom. However, by offering students the opportunity to make only brief responses to processual narratives in archaeology, and minimal engagement with the physical site and material objects, we observe a mismatch between the educational discourse in which they are engaged, with premises set by the archaeologists, and the educated discourse that they are meant to be entering (Mercer 1995): to become critically engaged in the problem of making historical interpretations.

In light of these findings, Zamir's 'how do you know that?' question invites closer investigation. In excerpt 3, the archaeologist situates himself behind a table as though in a traditional classroom, with findings laid out in front of the students, creating a physical distance between expert and novice, or teacher and student. The students are invited to hold

and touch the objects. As mentioned above in the analysis, the student's curiosity question appears to have been triggered by the archaeologist's account of challenges in accurately describing life in the Stone Age when 'clues' have rotted away. On one level, Zamir's question may thus be seen as a common sense response to this contradiction in the archaeologist's logic – how is it possible to know what life in the past was like "in reality" without physical evidence? From a *narrative production* perspective, we have analysed this as a tension between processual and post-processual interpretative traditions in archaeology. However, in terms of *narrative consumption*, and in keeping with a perspective on interest as situated in space and time, it is also possible to point to the physical setting and context as mediating Zamir's challenge to the archaeologist. In other words, although not directly apparent in the interactional data, Zamir's interest and question may also be mediated by the *contrast* between processual narrative that is centred on how to make accurate scientific 'historical interpretations', and the material aspects of the artefacts and excavation site in which the interactions take place.

In terms of schematic narrative templates, we identify in the data what we have termed a processual narrative in archaeological research as the predominant resource for the archaeologists' interactions with the students. As discussed above, this schematic narrative template builds on ecological models and the search for objective, measurable knowledge about the past. The use of this narrative is illustrated when the archaeologist explains that precise methods are needed in the search for knowledge that will complete, or solve, a jigsaw puzzle. Students are informed that methods are

intended to find objects and to secure historical knowledge and information, rather than to generate interpretations of historical developments that are inherently open to change. The students' task thus becomes focused on mastering knowledge of archaeological methods rather than understanding how archaeology informs historical knowledge and interpretation. In contrast, post-processual perspectives in archaeology would emphasise that even with very precise methods and instruments, the relevance of archaeology for historical knowledge is dependent on interpretations made by the human eye and mind, based on tradition and language, and involves measuring, collecting and purposefully selecting some objects instead of others.

It is interesting, then, that although post-processual perspectives are predominant in contemporary archaeological research discourse, the students are not invited to participate in reflections on the significance of archaeological findings for historical interpretations. It is only when the processual narrative is resisted by the student, marked by the question 'how do you know that?' that a space is opened to reflect on the nature of historical interpretation, illustrating the dialogic function of narrative. It is this resistance in narrative consumption, or what Wertsch (2002) calls *disappropriation*, that allows Christian to acknowledge that archaeological knowledge is uncertain, that you can never really know for sure, and that this is what makes archaeology so exciting. Linell (2009) calls this a *double dialogue*, in that Christian is leaning toward an institutional discourse of archaeology that is more theoretically open to uncertain knowledge, while at the same time focused on narrative in excavation work that retains a strong methodological, practical and positivist

foundation. This duplicity is further apparent when he adds that historical knowledge is subject to change over time through the development of new methods. The archaeologist is drawing on both processual and a post-processual narratives – opening up and at the same time closing down by drawing on the familiar positivistic narrative of doing science that is predominant in the excavation field (Ekeland 1999).

CONCLUDING REMARKS

One of the aims of this study is to contribute to improving educational practice in archaeological mediation, or public archaeology. In summarising findings from this study and others, we propose that a heightened awareness of three aspects of learning processes may contribute to more meaningful interactions between archaeologists, disciplinary knowledge and the public. First, there is a need to develop *dialogical approaches* to engaging publics in archaeology's scientific discourse about historical interpretation. Studies of visitors' conversations with museum guides and curators in museum learning research show that the level of engagement and reasoning is linked with the ability of the teacher to pose open and authentic questions, and to introduce disciplinary knowledge in ways that dialogically build on and extend participants' current level of competence (Pierroux 2005, Dysthe et al., 2012). In formal learning settings, studies also show that a deeper understanding of dialogic perspectives in the learning research tends to change teachers' use of an I-R-F conversational structure (Dysthe 1993, Aukrust 2001). Accordingly, we propose that heightened awareness of dialogic approaches is needed to improve educational practice in archaeological

82 mediation. Rather than ‘importing’ interactional patterns and resources from formal learning in schools, which studies in the museum field trip research show can dampen interest and reduce motivation (see DeWitt & Storksdieck 2008), archaeological mediation needs to promote a shared sense of dialogic inquiry into the possibility of making historical interpretations.

Second, there is a need to critically examine the *narratives* put forth in archaeological discourse. From a learning perspective, narrative is a cognitive tool for organising understandings of the past (Wertsch 2002). There is therefore a need for epistemological perspectives in archaeological mediation on narrative consumption as well as narrative production. Interestingly, awareness of the ‘dialogical aspect of narrative’ in the learning sciences mirrors archaeology’s move into the post-modern era, and the general call for a plurality of interpretations in museums and in the field at archaeological excavations (Olsen & Svestad 1994, Ekeland 1999). Rather than advocating any particular archaeological narrative, we identify the need for situated reflection on narrative approaches to the different forms of social interaction that are an essential part of public archaeology and museum outreach in general. At an excavation site, there are special challenges in mediation in that standard procedures are reversed; presentations to the public in museums typically follow excavation and field research while mediation for the public at excavation sites occurs simultaneously with research in the field (Kramvig & Ekeland 2006).

Third, we point to the situated, *physical context* of archaeological mediation. There is a need to further develop concepts, methods and research designs that explore the

mediational properties of the excavation site as material and physical setting. In this sense, sociocultural perspectives tangent with archaeological discourse on the material turn, or symmetrical archaeology, briefly discussed in the beginning of this article. Similar to Olsen’s (2012) concern with the importance of objects for human society, which is after all ‘built with things’ (*ibid.*: 173), sociocultural perspectives are concerned with the reflexive relationship between cognition and cultural tools in human development. In sum, we propose that sociocultural perspectives on dialogical approaches, narrative and materiality contribute a new theoretical and methodological framework for studies of archaeological mediation and meaning making.

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