

Between the facts: speculation in the history of archaeological thinking

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Abstract

This article charts the place of speculation in the history of archaeological thinking, offering a review of the role of speculation beyond hypothesising or wild conjecture. Bringing together uses of speculation in key works in archaeological theory, we propose that speculation can offer fertilizing interstices of facts, engendering openings towards the possible in archaeological thinking as well a revitalized mode of critique. Speculation is thus not simply a free-of-charge surplus activity when all evidence-based explanations fail; rather it is a practical engagement with archaeological possibilities. In the course of the article, we explore the relationship between notions of speculation and hypothesising, and between speculation and imagination with reference to modes of speculative thinking in the history of archaeological thought. Based on this review, we suggest that speculation can be recast as a method for disrupting normative or canonised perceptions of archaeological data and explanations.

Archaeological anxieties

In 1955, at a time when archaeology was developing rapidly through its integration with the natural sciences—with the advances of radiocarbon dating and pollen analysis amongst other methods—British archaeologist Margaret Smith (1955) deemed archaeological inference a hopeless task. Her epistemic pessimism was partly animated by the realisation that there is no direct and logical link between past realities and archaeological remains. A great number of possible explanations, she argued, *could* account for observed archaeological remains, and she took the multiplicity of possible explanations to question ‘how far archaeological cultures correspond to actual societies’ in the past (Smith 1955, 6). Accordingly, if archaeology could produce multiple equally valid explanations for the same material assemblage, it would be impossible to decide which explanation was correct. If archaeology’s ultimate goal was to be ‘the re-creation of the past’, as Smith argued via Mortimer Wheeler (Smith 1955, 4), how could one do justice to the actual complexities of the past, rather than randomly choosing an explanation that was restricted to and by the observed material? Smith felt helpless in front of all the untestable conjectures that the archaeological material can afford, and opted for a Berkeleyan idealism instead, contending that archaeology should never aim at re-creating or reconstructing the past, but only *recover* its fragmented material remains (Smith 1955, 7).

To some readers, this outline may appear as an unnecessary rehearsal of worn-out or clichéd concerns in archaeology: What are the limits of knowledge in archaeology, and how should archaeologists respond to such limits? Some would

contend that archaeological methodology after Smith has moved well beyond such problems. It may be argued that Smith's concerns have been resolved by the stringent scientific research designs of New Archaeology, or that they have been relieved by the interpretative mediations of post-processualism. Others may consider the discipline replenished by the speedy acceleration of scientific methods, currently highlighted by many archaeologists as a means of doing away with past uncertainties, offering a renewed potential for establishing absolute knowledge of the past. All of these advances after Smith, one might argue, push the limits of archaeological knowledge to hitherto unseen frontiers, filling in knowledge gaps and undoing many of the uncertainties posed by older research designs and technologies.

Nevertheless, we want to question whether the basic challenges to archaeology, identified by Smith, have really been resolved, and whether that will ever be possible at all. This hesitation or doubt may sound like a wholesale dismissal of the archaeological project, representing a pessimism on behalf of the discipline akin to the one formulated by Smith. However, what we want to suggest is that the limits of knowledge should not be perceived as incapacitating archaeology. The archaeological record is characterised by the condition that some things disappear, while other things linger (Lucas 2015), offering the discipline several open-ended possibilities in any attempt to reconstruct, account for, explain or interpret the past. Accordingly, the limits of knowledge are in fact an opening for the discipline to generate contributions that exceed documentation, proof, evidence, falsification or validation. This opening is time and again perceived as a fundamental threat to the integrity and credibility of archaeology, as it is seen as an invitation to untethered conjecture and an 'anything goes' attitude to archaeological narratives, leading directly to a harmful, disabling relativity or simply an effacement of the very authority of archaeology, reducing it to mere guesswork.

By contrast, we want to propose that the very limits of knowledge in archaeology bestow the discipline with the *mandate* for speculation. Importantly, we contend that it is precisely a mandate: at the same time a privilege and an obligation. In short, what we have in mind is to sustain Smith's observation that there are things archaeology simply cannot know anything about *with certainty*. To explore the mandate nested in this uncertainty, we aim at a position that does not fall back on 'mechanisms of closure' (Gero 2007, 323) by which we mean finite (or at least seemingly finite) conclusions based on probability and proof. Framing archaeology strictly with reference to these qualities, the discipline will be confined to truncated narratives on positive evidence, which will always remain limited and fragmented in nature. Instead, we pursue a framework for working with the archaeological record in a way that opens up the *possible*, exploring *interstices* between pieces of positive evidence.

We realise that we may be moving speedily into the mire of old and perhaps all too familiar problems. Since we argue that archaeology should not *only* be concerned about 'getting it right' in the explanation or interpretation of the archaeological record, it may seem that we automatically succumb to some kind of

radical relativism as noted above. If archaeologists cannot know with absolute certainty whether their explanation or interpretation of events transpiring thousands of years ago are correct, are we then simply suggesting that archaeologists might just as well ‘jump on the post-processual archaeological band wagon, and thereby become free to create their own unique picture of the past’ (Blehr 1993, 30)? While we do not *par tout* want to rule out the usefulness of imaginative conjecture, or what Alison Wylie calls ‘armchair speculation’ (Wylie 2002, 21) or ‘arbitrary speculation’ (Wylie 2002, 131), we frame speculation in a different way: as a mode of questioning, doubting and wedging in other possibilities than those canonised or currently verifiable. This means that, for us, speculation is nested in an empiricist approach: speculation in archaeology denotes a form of empiricism because it is dependent on archaeological traces, yet it is a speculative rather than positivist form of empiricism because it is not restricted to factual evidence.

What we want to fertilize is thus the archaeological potential nested in the possible rather than the factual, creating more *inceptions* than conclusions, fostering ambiguities, contradictions, and new spaces of inquiry. According to Sjoerd van Tuinen, ‘Speculative thought derives its legitimacy from a cultivation of interstices’ (van Tuinen 2016, 108). He argues that ‘strong links’ must be turned into ‘weak links’ through speculation:

With the discovery of the strength of weak links, the ultimate question for speculative thought becomes: How to become more elastic in order for the possible (distinguished from the probable, the repression of interstices) to fill us up? How to turn thought from mere speculation on the void into a mediator between interstices? (ibid)

The definition of speculation along these lines implies a connectivity to actual objects, observations or established knowledge, precisely because it nurtures interstices of *something* rather than roaming pointlessly in a void. It is the cultivation of the interstitial *possible* that we wish to pursue in this article, exploring how archaeology can own up to its speculative mandate. Importantly, we do not claim to be outlining a radically new take on the archaeological in any way, but instead to address qualities already present in archaeological literature. We thus want to revisit a number of studies that have actively pursued speculation as a strategy, although often implicitly, in order to leave open possibilities or challenge the limits of the ‘known’ world of archaeology. These studies have outlined possible explanations to given problems without being able to verify the given hypothesised explanation. In this way, the crucial question pertaining to speculation lies in the matter of its expiry date. If speculation currently does not lead to a hypothesis that is testable or verifiable, how long is its ‘shelf life’? Is speculation redundant if it can never be tested at all?

The aim of the article is to offer a review of speculation in the history of archaeological reasoning, charting various attitudes to speculation and its perceived merits and dangers. Mainly, speculation has been used as a term to describe

narratives of that which is *beyond* factual, evidence-based knowledge. We contend that speculation is applied perhaps more usefully for *interstices* of factual knowledge, describing the *possible* and the *unpredictable*. We will therefore proceed from an—admittedly selective—outline of speculation in archaeological thinking to discuss ways of embracing the speculative mandate. As such, the aim of the article is to recast speculation in archaeological reasoning, pursuing what we term ‘interstitial speculation’ as opposed to ‘arbitrary speculation’. We thereby hope to help turning speculation from an archaeological colloquialism for un-academic guesswork and ‘anything-goes’ interpretations to a disciplined orientation towards factual interstices and the unpredictability of archaeological.

Trajectories of speculation in archaeological thinking

The epistemological anxieties expressed by Smith have led to several responses in the later 20th and 21st century. We argue that speculation has been a central ingredient in each of these reactions, even though speculative thought has largely been associated with un-academic, pseudo-scientific conjecture. Nevertheless, the fragmentary nature of the archaeological record, and the inability to make direct observations of past realities, seem to have necessitated an element of speculation in all archaeological agendas. This leads us to the ultimate archaeological dilemma; the grey areas between the static and the dynamic, the present and the absent, and the material and the theoretical. How can one know when a hypothesis or an interpretation, say a description of past uses or meanings of an artefact, ceases to be factual and when it enters the realm of the unacademic speculatively imaginary?

Smith has not been alone in contemplating the epistemic challenges emerging from the nature of the archaeological record. David Clarke dryly observed that ‘Archaeology in essence then is the discipline with the theory and practice for the recovery of unobservable hominid behaviour patterns from indirect traces in bad samples’ (Clarke 1973, 17).—Unobservable patterns, indirect traces, bad samples. Where can such a condition lead? Surely, the lacunae and obscurities observed by Clarke will either end in epistemic resignation or in speculation to make the fragmentary evidence speak. While Smith opted to resign from making speculations on the archaeological material, choosing to go no further than describing it, other archaeologists have struggled to find ways to navigate the troubled route from fragmented data to arriving at knowledge of the past without succumbing to mere conjecture. David Mellor thus writes:

No doubt the data will always be flimsy, the tests inconclusive, the scope for imaginative alternative theories great. None of this reduces archaeological theorizing to the level of guesswork. The complexity of the subject and the relative paucity of data may well be part of what makes archaeology, like cosmology, endlessly fascinating and likely to be endlessly unsettled. But it is a great mistake to suppose that what is endlessly fascinating and unsettled therefore cannot be scientific. If it were so, there would be very few sciences (Mellor 1973, 498).

Hence, the open-endedness of the archaeological record—due to its absences, fragmentation and alterity—lends it to speculation, for better or for worse. And historically it seems that speculation has indeed assumed the role of a double entendre, being portrayed most typically as a risk to archaeological credibility, but sometimes also as a necessity or strength. As implied by Mellor, speculation carries connotations of un-academic guesswork, leading on ‘anything-goes’ interpretations with little or no substantiation.

This has led to many cautions about the limits of archaeological narratives, for instance as formulated by Phil Kohl: ‘sometimes the “Indians” are not particularly visible behind the artifacts, and, when that is the case, one should restrain or modify one’s poetic, fictional impulse to concoct a just-so story. As archaeologists, we should not aspire to be Jean M. Auel’ (Kohl 1993, 15). As Kohl recommends, if archaeologists realise that they cannot answer the questions they asked of the archaeological record, they ‘should simply admit it and ask other questions of these materials’ (Kohl 1993, 15). The alternative, ‘deliberately introducing unsubstantiated and often ideologically driven speculation into narratives’, Bruce Trigger (2006, 472) contends, ‘raises serious ethical issues’. However, according to Trigger some archaeologists—postprocessualists—claim that it is impossible to determine which interpretation of the archaeological material is valid, but unlike Smith, for them ‘this impossibility justifies a speculative approach, since it is the best that is possible and without it prehistoric archaeology would be irrelevant to the present’ (Trigger 2006, 474–475).

Curiously, it is precisely the open-endedness of the interpretative possibilities that leads Clarke to contend that there is a need for speculation in archaeology, because the ‘exposure of archaeological metaphysics’ allows the discipline to ‘consider the possibilities of altering or rejecting current disciplinary concepts in favour of some alternative forms’ (Clarke 1973, 13). He argues that artefact taxonomies of the traditional Montelian paradigm are controlled by a system of *a priori* rules, or ‘taxonomic postulates’ that do not necessarily correspond to the material under scrutiny. To solve this problem, he states, ‘fundamental speculation (...) is exceedingly important if only because the more fundamental the metaphysical controlling model, the less we are *normally* inclined to rethink it’ (Clarke 1973, 14, emphasis in the original). In this way, speculation becomes warranted as a means of thinking differently about observations referring to assumptions and canonised postulates (see also Marila 2018, 40).

While Clarke thus describes speculation as a necessary method for disruption, Ian Hodder has framed speculation as a means of testing interpretations. He argues that archaeology has been caught up in a dilemma by striving to be scientific and objective, thus fearing speculation and subjectivity, while at the same time wanting to make meaningful interpretations of the past. This implies a need to move beyond the data itself, yet ‘there can be no testing of these interpretations because the data themselves are formulated within and are part of the same argument as the theories. Speculation and the subjective are therefore part of the “scientific” process’ (Hodder 1992, 111), because ‘all cultural

reconstruction depends on imputing subjective meanings to particular historical contexts' (Hodder and Hutson 2003, 153). Michael Shanks and Christopher Tilley thus contend that in archaeological writing, 'there can be no simple choice between fictional creations and objective copies of the past' (Shanks and Tilley 1992, 8). Nevertheless, they maintain that their 'intention is not to sacrifice objectivity and replace it with an extreme and disabling relativism' (Shanks and Tilley 1992, 8).

Shanks and Tilley thus contend that the archaeological transfer of the past into the present 'is not free or creative in a fictional sense' (Shanks and Tilley 1992, 104). Regardless, this is precisely what post-processual archaeology has been accused of time and time again (e.g. Blehr 1993, 30), juxtaposing subjectivity and objectivity as two idealised and clinically separated poles. Critics have argued that the hermeneutic, post-processual approach leads archaeology astray, because it hinges more on personal experience, imagination and 'uncontrolled storytelling' (Redman 1991, 301) than evidence and facts that provide an 'orderly' and 'accurate appreciation of the past' (Binford 1987, 404). As Hodder and Hutson recognise, 'many will feel that we have gone too far towards the contextual and speculative. A common reaction to claims that we must interpret subjective meanings in the past is to point to problems of validation, to inadequate, mute data' (Hodder and Hutson 2003, 153). Bruce Trigger confirms this suspicion:

The refusal of many postprocessual archaeologists to consider the evidential limitations of their efforts to study prehistoric material has resulted in attempts to justify inferences regarding habits and beliefs associated with prehistoric cultures that are based largely on speculation and intuition. Such approaches are justified on the grounds that they offer hypotheses that may later become testable or, even more lamely, that nothing more convincing is currently possible. Such interpretations become conduits through which all sorts of unexamined prejudices and personal biases are introduced into archaeology. They ignore the alternative course of remaining silent regarding matters that are unknowable. Unsubstantiated speculation currently threatens to return archaeological interpretation to the highly subjective and irresponsible state of "story-telling" from which Lewis Binford and David Clarke, each in his own way, sought to rescue it in the 1960s. I do not deny the importance of formulating hypotheses for advancing a scientific understanding of the past, but maintain that, if this activity is to be useful, it must be accompanied by serious efforts to test such propositions (Trigger 2006, 517–518).

This tension between the subjective and the objective has a deeper pedigree in the history of archaeology. Trigger's *opus magnum* on the history of archaeological thought repeatedly reflects how the relationship between the archaeological and the speculative has been construed historically (e.g. Trigger 2006, 100, 154, 162–163, 321), frequently contrasting the epistemic roles of 'fanciful speculation' viz-a-viz 'sober investigations' (Trigger 2006, 89), 'mere speculation' viz-a-viz 'a hypothesis for which there was already some evidence' (Trigger 2006, 123), and 'scientific theories' viz-a-viz 'philosophical speculations' (Trigger 2006, 154).

Focusing on rhetoric style in the history of archaeological dissemination, Hodder furthermore describes how 18th century excavation reports are

characterised by ‘excitement’, ‘personal pronouns’ and ‘actor-oriented accounts’, while identifying ‘unwarranted interpretation’ as ‘conjecture’. As archaeology increasingly adopted scientific methods in the latter half of the 19th and early 20th century, specialist reports became the standard, where archaeological objects are placed in constructed archaeological typologies and the rhetoric turned more technical, detached and impersonal. The passive voice is employed in the writing style more widely (e.g. an object ‘was found’, and ‘it must be noted that’), while personal pronouns, authors or actors disappear somewhat from the accounts. To Hodder, the change in writing style ‘seems to suggest there can only be one possible interpretation. Indeed, admitted interpretation has largely disappeared behind objective description. Thus, “a comparison ... will show that”—as if the observations as well as the artifacts had been found, and as if the description is self-evident, distanced from any onlooker or author’ (Hodder 1992, 230). In this way, it may be argued that the passive voice makes it more difficult to distinguish fact from interpretation, whereas the active, personal rhetoric at least preserves transparency in terms of the author’s ownership of the text.

Joan Gero has aptly characterised archaeology’s prioritisation of unambiguous language and scientific conclusion as ‘mechanisms of closure’ (Gero 2007; c.f. Sørensen 2016; Marila 2017). Gero contends that archaeology’s widespread insistence on certainty and exactitude tends to simplify phenomena that are inherently underdetermined, interpretively complex, and incomplete, and that in doing so archaeologists paradoxically undermine their objective of attaining a deeper understanding of the past. As a remedy against archaeology’s established ‘mechanisms of closure’, Gero (2007, 323) urges archaeologists to remain transparent about their epistemic ambiguities, and to ‘protect and preserve’ ambiguity as a valuable research reality rather than aim at its elimination. While much of archaeological science has fulfilled Gero’s mandate for remaining transparent about epistemic ambiguities, the preservation of ambiguity has been overlooked. In archaeological science, ambiguity has been tolerated only insofar as the speculation it introduces can be subjected to testing and consequently eliminated.

Interestingly, in Triggers criticism of post-processualism, he refers to the justification of speculations ‘on the grounds that they offer hypotheses that may later become testable’ (Trigger 2006, 518). In principle, this latency in speculative thought can be connected with otherwise more ‘scientific’ strategies in archaeology. For instance, the epistemic optimism associated with New Archaeology’s adoption of logical empiricism, a strict scientific logic of elimination and the hypothetico-deductive method can be regarded as hinging on a temporary speculative element (e.g. Binford 1968, Watson, LeBlanc, and Redman 1971, c.f. Gibbon 1989, Kelley and Hanen 1988, Wylie 1989). A decisive element in the hypothetico-deductive method is of course precisely the hypothesis, offering the first step in the research process by outlining the *possible* answer to a question. The researcher or the research team must be able to imagine what *might* be the answer to a given question in order to be able to test it. Speculation is here set in

an agenda, where only the hypotheses that seem probable are tested, and only survive if adapting to its data. Ideally, this does not allow for only partially ‘correct’ speculations or for the possibility of fuzzy boundaries between ‘true’ and ‘false’ verdicts (Clarke 1978, 16, see also Sørensen 2016, 745). Yet, testing hypotheses may not only lead to attempts at strengthening the empirical support of the hypothesis, i.e. proving it correct. Wylie thus describes how the testing of a hypothesis should not be seen as the process of building evidence in support of the hypothesis, ‘but rather as a matter of subjecting bold conjectures to the most rigorous tests they can devise’ (Wylie 2002, 19). Referring to Karl Popper, she describes how science and pseudo-science are not distinguished by ‘the degree of empirical support or the empirical content of its constituent claims, but the uncompromising critical attitude that scientists bring to bear in evaluating these claims’ (Wylie 2002, 19)

Another set of problems emerge, when a given question cannot be directly illuminated through the available material. For Trigger, this is what leads post-processual archaeology to illusory ‘story-telling’. He recommends a sobering alternative: ‘remaining silent regarding matters that are unknowable’ (Trigger 2006, 518). Such a course resembles Smith’s (1955) even more radical withdrawal from attempting to reconstruct the past to simply recovering it. Recently, moreover, Assaf Nativ has argued that archaeology needs to curb its research questions in accordance with its source material, because ‘too often the pursuit of the cultural past justifies glossing over empirical ambiguities and difficulties’ (Nativ 2018, 13). Yet in moving towards ambiguities, he is keen to stay clear of ‘anything-goes’ solutions, and instead recommends methods that may ‘achieve reduction without distortion’ (Nativ 2018, 14) in order to align the archaeological and the theoretical. Nativ (2017) presents a number of principles for assessing the archaeological relevance of the theoretical. First, he insists that the object of analysis should be the object of interest: instead of asking questions to the archaeological material that it cannot answer, archaeologists should come to appreciate archaeological absence as an inherent quality of the subject matter (Nativ 2017, 669). For Nativ, the archaeological tendency to treat absence and fragmentation as a deficiency results in methodological and theoretical compensation in the form of further interdisciplinarity and more borrowed theory. This leads Nativ to state that the archaeological procedure essentially ought to be descriptive rather than interpretative, or more precisely, that interpretation should derive from the description rather than targeting the absent (Nativ 2017, 669–671). Finally, the validity of an interpretation should be assessed according to its agreement with the observed phenomenon (Nativ 2017, 670). In this sense, the treatment of absences and ambiguities inherent to the archaeological record must not lead to untethered speculation but should be checked against the empirical.

Each of the above-mentioned approaches and attitudes to speculation argue in favour of a correspondence between the conceptual and the material. They provide disparate views on the direction or nature of correspondence between archaeological facts and theories, but they are all based on the idea that

archaeologically valid or useful interpretations *should* agree with known archaeological materials, rather than allowing the interpretation to emerge from and exceed the material. This seems to be in full agreement with Christopher Hawkes' contention that archaeological reasoning must proceed 'towards the unknown from the known' (Hawkes 1954, 167), meaning that explanations need to be built from the facts up, and always be checked against the facts. Otherwise, archaeological pasts that are not immediately knowable will be filled by an imaginary account fabricated by the narrator independently of the material (Hawkes 1954, 163). The approaches outlined above tend to be more concerned with the procedure of comparing plausible interpretations rather than the actual *process* by which hypotheses come to be useful. Assessing the face value of archaeological hypotheses by checking them against a known body of evidence emphasises the *structure* rather than the *process* of argumentation, and in doing so a whole range of hypotheses that may be useful and valid in the long run are left out.

Archaeological realism: the possible and the unpredictable

So far, we have been rather inexplicit about the meaning or definition of theory in archaeology. While theory can mean many things—from theoretical ideas borrowed from other disciplines, to generalising archaeological grand narratives, hypotheses or models, to meta-archaeological reflection about the actual process of speculation—it is the latter that we want to emphasise here. First, this highlights an important but, in our view, under-researched aspect in the epistemology of archaeology. Although the concept of process has been central to archaeology for at least 50 years, it has only relatively recently been seen as a defining characteristic of the actual process of archaeological knowledge production, most frequently in form of process ontology (Pauketat 2001, Dawdy 2009, Witmore 2009, Alberti et al. 2011, Solli 2011, Gosden and Malafouris 2015, Harrison 2015, Marila 2017). What these process approaches have achieved is the understanding of the relationship between human and world as an open-ended practice, a type of joint effort with no certain or predictable outcome.

More recent archaeological discourse on knowledge production as process has come to stress the need for speculation explicitly. We see this literally as a 'return to empiricism', only not a positivist empiricism. Instead of treating the archaeological facts as the touchstone of a given archaeological theory, this speculative empiricism is driven by the conviction that the subject matter of archaeology continually unfolds in multiple ways through the very practice of archaeology, thus necessitating a speculative understanding of archaeology's epistemology (Witmore 2015). In essence, the rather broad 'new materialisms' of archaeology appear to be developing as a reaction against the reductive strategies of positivist as well as post-structuralist archaeologies (Witmore 2014). In this sense, the archaeological record, as a contemporary phenomenon, is treated as radically multiple, relational, and dynamic, emerging from—rather than reducible

to—the archaeologist’s engagement with it. In the ontological sense, the past is partly created, but by no means exhausted, by archaeological theory and practice. What we take from the new materialisms may thus not so much be a strategy for doing away with methodologically systematic approaches to the archaeological, but instead a response to their limitations and an insistence on their open-endedness.

Within this framework, speculation may at the same time work both as critique of perceived facts and a renewed exploration of the possible (Bryant, Srnicek, and Harman 2011, 3). While concern for ontological plurality can work as an antidote to archaeology’s methodological simplification, the question how archaeology contributes (and, perhaps more importantly, has contributed) in shaping past reality through its intellectual activity remains relatively unaddressed. If, following the ethos of the new materialisms, we are to grant things their say in the interplay between the material and the theoretical, ontological concerns become deeply entangled with the epistemological, and archaeologists have to seriously reconsider how the epistemological strategies will have to be shaped accordingly (Pétursdóttir and Olsen 2018). Þóra Pétursdóttir and Björnar Olsen thus argue that theory—like objects—have an unknown ‘dark side’ and ask whether it is possible to recognise their ‘unrealized excess—and the unanticipated potentials mutually discharged through the synergy between data and theory’ (ibid: 104).

One of the achievements in archaeological theory in the wake of object-oriented philosophy has then been the recognition that speculation is not an epistemological deficiency to be overcome but is instead a necessary consequence of the very nature of the ontology of objects and the way they can be approached (Harman 2016). Reality, then, is not simply a collection of parts that we gradually come to know, but rather a network of practices, both human and non-human, that continually create something new in the process. One central argument in the object-oriented discourse has become that the tendency of modern science to break things down to their elementary constituents and at the same time to consider them knowable through mathematisation (including, for instance, ‘mechanisms of closure’), tends to dismiss or simplify things or treat their inner workings as given. In reality, as argued by Graham Harman (2013), an unlimited number of unexpected things can emerge as result of the multiple ways in which things can come to form new relationships.

Such conceptualisation of things, however, is not entirely new to archaeological theory. A similar view was put forward by Edmund Leach (1973) in his critique of New Archaeology’s ‘naive optimism’. Criticising the environmental determinism of New Archaeology, he argued that ‘[t]here are always an indefinitely large number of alternative ways in which particular human social systems might be adapted to meet particular ecological and demographic situations’ (Leach 1973, 767). Leach therefore questioned the straight-forward use of the hypothetico-deductive method in making inference from the static record to dynamic systems. Consequently, inferences should instead be used as open-ended guesses meaning that their speculative nature needs to be acknowledged.

Considering the recently established conception of ontology as a concern for diversity, emergence and the relational (e.g. Witmore 2014, Harris 2018), one question that needs to be addressed again is the role of the *possible*—whether thinkable or unthinkable—as an epistemological register. Or, phrased differently: ‘What [...] epistemological questions might possibilities pose to practices of knowledge-making?’ (Savransky, Wilkie, and Rosengarten 2017, 12). These concerns have recently been elaborated in terms of archaeological theory by Pétursdóttir and Olsen (2018, see also Pétursdóttir 2017) who, developing on the principles of object-oriented philosophy, state that just like objects, theories can and will become much more than what they were initially set out to do. Theory can do many things: it may change or evolve, giving rise to novelty or emergence in the ontological and epistemological sense. Theory is restless, not simply due to archaeologists arguing and bickering, but because the nature of theory is unstable, revolving around a never fully exhausted potentiality. Accordingly, Pétursdóttir and Olsen argue that ontology and epistemology cannot be disentangled: the ontology of the object of study changes with the applied epistemology.

How does the fading of ontological polarities and the growing recognition of non-human agency actually come about? Is it likely that these changes stem solely, or even primarily, from pure reasoning, speculations or ‘magical’ happenings in the theorists’ minds? Or is it rather the case that they emerge as a consequence of experience and knowledge gained from attending to things, to how they behave and to what is disclosed through acquaintance with their mingled articulations? In other words, that ontology depends on knowing as much as knowing depends on being (Pétursdóttir and Olsen 2018, 107).

Pétursdóttir and Olsen’s analysis of archaeological theory as something that is never fully fixed, but is instead in a constant state of becoming something other than we think it is, highlights archaeology as a speculative, empiricist, and materialist philosophy (c.f. Sørensen 2018). As a discipline with a deep history in trying to understand and appreciate the past with all of its ambiguities and idiosyncrasies, archaeology may be described as an ontologically and empirically sensitive philosophy (Marila 2017). This is of course only possible if we realise that, just like archaeological theories can never fully exhaust archaeological facts, as inherently unfixed entities theories remain similarly inexhaustible. Instead of setting up intellectual parameters designed for systematic doubting of what it is that we are experiencing, we need to relax, lower our theoretical guard, and remain open to the archaeological (e.g. Pétursdóttir 2014).

Following these sentiments, our take on speculation resides in the slow, the small and the modest. We contend that it is not so interesting to speculate about ‘general laws’ (as processual archaeology would have it) or ‘interpretations’ of symbolic realms (as post-processual archaeology would have it). The interstitial speculation we outline is not interested in fast, big, and ambitious theorising about the large mechanism of human behaviour, or the true meaning of Stonehenge, i.e.

in speculating about finite answers to questions. Instead we take interest in the forever unfinished potentiality ‘between the facts’.

To us, this speculation into the interstitial denotes a radically empiricist form of speculation, and as such an attitude particularly well suited for the needs of field archaeology. In addition to pure theorising, then, speculation and open-endedness find especially important applicability in archaeological fieldwork. For instance, much excavation and survey are, or at least should ideally be, driven by the anticipation of the possible. Speculation is engrained in excavation and survey, because archaeologists can never know with certainty what they will find. As such, field archaeology, even though it might be based on clues and hints provided by surface surveys, test pits, or LIDAR, sits in the interstice of the ‘known’ and the speculative quality of the unknown; a space for anticipating the possible. In archaeology, things ‘happen’ to show themselves, and therefore the relationship between investigation and knowledge production must also be planned according to the unpredictability of the archaeological.

The element of surprise and unpredictability in the context of fieldwork has convincingly been discussed by Matt Edgeworth (e.g. Edgeworth 2012, 2016). Most importantly, Edgeworth (2016, 111) sees the craft of archaeology and its practical engagement with the material world as a significant way of contributing to today’s speculative philosophies more broadly. In a similar fashion, Pétursdóttir (2017, 2018) contends that speculative philosophy did not just emerge from the theorists’ minds as a system that now allows her to approach any archaeological materials from a particularly speculative point of view. Instead, the very nature of archaeological materials is ambiguous and unfinished, which necessitates correspondingly speculative and open-ended forms of theorising. In this sense, the speculative stems from the archaeological itself rather than some pre-given philosophical system.

Towards speculative methodology

The considerations above lead us to contemplate what means and concepts archaeology has for speculative thought. In much of academic thought, speculation has been taken to imply the many ways in which we can possibly be wrong, being synonymous with ‘conjecture’, rather than denoting the rich diversity of the possible. The same is undoubtedly true for archaeology (e.g. Sørensen 2016, 744). Our approach takes speculation seriously, not as a deficiency that has to be eliminated or a desperate ‘last resort’ when all other explanations fail, but as a force of creation or a mode of critique. At its core, speculation must imply an attempt to exceed that what is already known, or what is stabilised in the scholarly agendas as ‘facts’. Considering this *potentiality function* of speculation, we want to highlight two conceptualisations of speculation’s methodological potential in archaeology, one connected to the speculative character of hypotheses that may or may not remain speculative, and the other denoting the essential open-endedness

of interpretation. The latter understanding of the term speculation highlights interpretation as an aesthetic rather than causal register.

Hypothetical speculation

If we are to establish speculation as a credible part of academia, we should not regard speculation as a specific methodology that somehow enables us to validate one speculative scenario over the other, but rather as an inventory of possible—but not necessarily probable—futures. In this setting, special attention is to be given to those low-level hypotheses that are not clearly evidence-based (simple enumerations), but still emerge from the researcher's experiences as speculative hunches, guesses, or anticipations that might ultimately be established as scientific theories. While hypotheses are vital for science, they are nevertheless supported by a fallibilistic hope that they also can and will be subject to revision by new observations. Or in the words of John Dewey (1929, 247):

General ideas, hypotheses, are necessary in science itself. They serve an indispensable purpose. They open new points of view; they liberate us from the bondage of habit which is always closing in on us, restricting our vision both of what is and of what the actual may become. They direct operations that reveal new truths and new possibilities. They enable us to escape from the pressure of immediate circumstance and provincial boundaries. Knowledge falters when imagination clips its wings or fears to use them. Every great advance in science has issued from a new audacity of imagination. What are now working conceptions, employed as a matter of course because they have withstood the tests of experiment and have emerged triumphant, were once speculative hypotheses.

The epistemological relevance of speculation as a method beyond metaphysics, then, is to challenge those established methodologies that take scientific progress to be the *result* of the use of a specific method, rather than the other way around. Science is not simply a matter of applying a predetermined method regardless of the actual practice of science. Whether a method is successful or not can only be determined retrospectively upon experimentation, and only so in relation to particular interests.

These methodological considerations also reintroduce the archaeological dilemma between evidence-based descriptions and speculative theorising in a new form. Instead of deciphering what distinguishes a true proposition from a false one, we should first and foremost be asking when it would be possible to do this. Or, in other words, what is the effective shelf life of a hypothesis that clearly transcends the materials it is supposed to connect to? Following Imre Lakatos (1978), scientific hypotheses are always dead on arrival; born already falsified with countless counter-instances. This means that scientific theories are not bundles of irrefutably rigorous arguments that can be overthrown by any single knockdown argument, but that hypotheses are temporarily abandoned or put on probation because of their rather vague insufficiency in accounting for everything that is

known (c.f. Harman 2017). Yet, what is the probation time? Can we, then, discard a hypothesis if it has not proven successful or false in three, thirty, or thirty thousand years? Speculation is a historical process: ‘Hypotheses are entities that evolve in deep time. Successful hypotheses induce beliefs only in the long future’ (Pietarinen 2015, 152). In this perspective, there is no fixed expiry date on hypotheses.

The astute reader may point out that by distancing itself from falsification, such a speculative epistemology becomes radically prophetic. The question is, then, whether this prophetic position allows science to entertain any hypothesis only because it *may* turn out to be belief inducing in the imaginable future? However, this does not mean that speculation is purely imaginary or that every hypothesis is possibly true or false. So while ‘anything goes’ applies to method (Feyerabend 2010), we do not extend this generosity to hypotheses. Speculation only means that the success of a hypothesis can only be established retrospectively.

What would this entail in archaeology? Ewa Domanska (2005), for instance, draws attention to a deeper layer of the etymology of archaeology, pointing out that the *arché* not only means ‘beginning’ (or ‘primeval’), but also ‘from the beginning’ and ‘anew’. Such an emphasis implies that archaeology studies that which carries the seed of a future, or of something innovative or revolutionary. She argues that the past should be considered an object of contemplation that prepares the ground for the future-to-come (Domanska 2005, 391–392). Instead of worrying if a given explanation of the past is argued well enough, we should be concerned with whether we are imaginative or creative enough to come up with fruitful ideas that allow us to successfully anticipate the ways in which the past keeps opening up with us. On this account, archaeology, according to Domanska (2005, 395), could be a prophetic rather than a retrospective discipline that ‘forthtells’ (ibid) the future from the traces of the past (c.f. Olivier 2011); i.e. not by discovering of a past what was always there but by the very archaeological act of creation (Buchli and Lucas 2001, 16–17, Pauketat 2001). Archaeology, Domanska contends, cannot predict the future through some kind of divine premonition, but it will, rather, be able to ‘point to *possible* results of present actions’ (2005, 395: our emphasis).

Certain pitfalls to this line of reasoning might be suggested, for instance with reference to Henri Bergson (1992), Karl Popper (1966) and Claude Levi-Strauss (1971). In Bergson’s view, historical events unfold as duration, which is characterised by ‘creative evolution’ and not by systemic structuration or predisposed patterning. Events thus cannot be ‘foreseen’ even by the most ‘sufficiently informed mind’, and Bergson holds that predictions are ‘absurd’ as events do not ‘pre-exist’ prior to their realisation (Bergson 1992: 21). Popper’s criticism is based on a similar line of thinking, arguing that patterns in history do not exist and that historical events certainly cannot be predicted in hindsight. Events do not unfold as a consequence of logical and causal mechanisms, where one event is bound to unleash a given and predictable series of other historical events (Popper 1966). In a similar vein, Claude Levi-Strauss (1971) also objects to

the idea of prediction in reverse, or what he terms historical ‘retrodiction’. In an argument against notions of racial supremacy, he contends that history does not evolve as a linear, progressive development, accumulating cultural progression. Rather, time is characterised by historical contingency, which means that the way in which history proceeds is defined by myriads of unpredictable, irreducible and relentless mutations of events, inventions, discoveries, interactions and transmissions. Altogether, this implies that archaeology (or any other discipline) is never in a position to predict possible future events but, more importantly, nor will it be able to ‘retrodict’ past events based on perceived patterns (see also Choi and Scholl 2006, Müller-Wille 2010). All moments are caught up in a contingent flow without direction, and causality is merely the explanatory restriction of potential outcomes of events.

However, what Domanska outlines, which is also our point here, is not the claim to certainty or truth through of some form of clairvoyant prediction, but to be able to address the *possible*. This outlook provides one possible conceptualisation for the fundamental role of uncertainty and interpretative open-endedness as part of the research process. A concrete archaeological discovery provides an example in this respect. Nayanjot Lahiri (2017) has recently offered an account of how the discovery of the Indian Bronze Age emerged as a slow hunch that was kept alive for over 20 years regardless of the many political or economic constraints that hindered the research. Perhaps more importantly, the discovery was a joint effort of more than one researcher and involved not only systematic analyses but good luck as well. This new discovery was not made because the initial hypotheses were correct, but because of the acceptance of the long-term risk that they would be false or unsuccessful, and regardless of the imagined consequences of their being false or unsuccessful (see also Plog 1974). In this sense, the successful hypothesis is achieved through subjecting one’s speculation to the anxiety and fear that accompanies this fundamental uncertainty.

As argued above, the obvious epistemological strategy of compensation for uncertainty in archaeology has been the gradual elimination of speculation; a strategy that ends up dismissing the complexity of the subject matter and, as a consequence, the potentiality of speculation as a form of future creation. Another, perhaps more productive strategy for dealing with the uncertainty nested in speculation would be to critically assess trusted methodologies through speculation, as also suggested by Dewey (1929, 247) and Clarke (1973, 13–14). They are indeed also driven by a hope that speculation will enable us to discover something truly new about the world. This is where speculation can become a point of connection rather than a point of separation between different conceptions of the sciences and the humanities. The speculative element should be seen as a positive trait that enables us to identify or even create interstices rather than compartmentalising regularities in experience.

According to Michael Halewood (2017), this type of creative speculation, or what he refers to as ‘situated speculation’, should be distinguished from other types of speculation, such as imagination or scientific speculation. In Halewood’s view,

situated speculation is grounded in facts (unlike imagination), but is not motivated by a truth it may succeed in manifesting (as is the case with scientific speculation). Rather, situated speculation is motivated by the possibility of the change it can create in experience. This is equally an expression of a trust that speculation will result in radically new experiences and equally a token of the hope that future experiences will have the ability of altering our existing beliefs, thus leading to new discoveries (see also Parisi 2012). In other words, in order to prepare for new experiences, a host of speculative strategies is needed. In this setting it is not possible to compare one speculative scenario to another because future experiences may be radically different from those imagined. Part of the hope, or perhaps rather trust, consists in adopting a hypothesis without speaking to a verifiable or probable truth scenario. Speculation can in this way lead to a more untethered form of thinking about the possible, which does not necessarily lead to hypotheses that may be canonized for their seeming plausibility.

Open-ended speculation

In order to further highlight the relevance of speculation beyond testability, verification, or falsification, we refer to Alfred North Whitehead's definition of the term. For Whitehead, the task of speculation is not to serve as a simple vehicle for verification, but to act as a 'lure for feeling' (Whitehead 1978, 184). It should be noticed, however, that the sense in which Whitehead speaks of feeling differs from the subjectivist understanding of the term. For Whitehead, the relevance of speculation as a lure for feeling lies in its ability to intensify the multiplicity of experience to its maximum point (c.f. Debaise 2017a, b). By underscoring the importance of the multiplicity of experience, Whitehead aims to make speculation the method by which we continually intensify the multiplicity of perspectives and different interests involved, rather than an external reality that can testify as to the relevance of those concerns. As an empiricist method, speculation attempts to free the scientist from following pre-existing abstractions, such as dogmatic certainty (Whitehead 1978, 263–264, cf. Stengers 2018, 112). For Whitehead, then, speculation is an attempt to reconcile the extreme forms of empiricism and rationalism, and his philosophy ends up being a combination of these positions. It is empiricist because it takes seriously the multiplicity of experience, and it is rationalist because it sees rational thought as an act of future creation (Whitehead 1956, 233).

Following Whitehead, what we often call theories, propositions, or speculations, can be very uncertain in terms of measuring their probability, but very productive in their capacity to create experiences that differ in some significant fashion from any previous experiences. Accordingly, the more speculative and productive a hypothesis, the more it introduces risk, and, inversely, the more probable a hypothesis, or, in other words, the deeper it is rooted in known facts, the less alternative modes of experience and existence it is capable of creating and appreciating. The Whiteheadian lure function of speculation, then, is

simply intended to intensify the multiplicity of experience and experiencing subjects, including those whose experiences have been suppressed or neglected. In this sense, speculation offers a frame of ‘thinking “against the grain”, not in the sense of thinking polemically or oppositionally, but in the sense of thinking against the inertia of thought, resisting the mental habits that unconsciously structure our judgement and channel our interests, which may include habits of reasonableness and critique’ (Greco 2017, 219). In the context of the study of the past, and more precisely in the context of the new materialisms of archaeology, the lure function aims at a remembrance of those things that may have been forgotten (Pétursdóttir 2012), as well as the acknowledgement of those academic accounts of the past that enjoy lesser degrees of respect from their academic community due to its established habits (Sørensen 2018; Marila 2019). Speculation, therefore, does not simply imply that the past could have unfolded differently, and that therefore multiple interpretations of the past are possible; the possibilities nested in speculation also directly tap into the significance of possibility as a social force of creation.

It is by juxtaposing imagination and speculation, we want to highlight our second understanding of speculation’s role in archaeology, the open-endedness of interpretation. For Michael Shanks, ‘the archaeological imagination is a bridging field, connecting different ways of working on remains of the past’ (Shanks 2012, 17). Shanks’ understanding of imagination is targeted at highlighting the importance of imagination as a way of comparing and connecting ideas in an environment free of the confines of disciplinary borders, and he sees imagination as a way to connect different interpretations of a set of existing materials. In this view, imagination is at least relying on facts, if not grounded in them. Edward Casey, on the other hand, defines imagination as being about ‘appearance and nothing but appearance. All that is evidentially relevant is given within imaginative experience itself’ (Casey 2000, 95). This leads him to say that imagination ‘contains nothing that might be mis-apprehended or mis-taken’ (Casey 2000, 95–96). Casey furthermore speaks of imagination as ‘*pure possibility*’ (Casey 2000, 36–37: our emphasis): ‘Of each imaginative presentation I experienced, it could be said that in it *anything* was possible; no particular object or event *had* to appear there in the first place, or to appear there in any specific way. The latitude introduced by the factor of pure possibility brings with it a sense of endlessness’ (Casey 2000, 37: emphasis in the original). Casey’s phenomenological take, then, aims to free imagination from the confines of material experience.

Importantly, these two takes on imagination further highlight an important difference between imagination and speculation. While anything may be possible in imagination, as a contrasting position, speculation adopts a further degree of responsibility in regard to the implications of imagination or the type of anything-goes thinking already discussed. As a method of thinking that can be distinguished from imagination as ‘*pure possibility*’, speculation stresses the consideration of the *common* implications of what is possible. It is therefore possible to outline speculation as an empirically sensitive form of anticipation. This notion is central

to our outlining of the speculative mandate—simultaneously as a privilege and responsibility—and more importantly a way of taking the implications of speculation seriously.

In thinking of the very practical social responsibilities introduced by the privilege for speculation, Monica Greco's (2017) analysis of 'outrageous propositions' can be of particular assistance. Greco argues that, in reacting to propositions that challenge their established convictions, social scientist can often be outraged 'by proxy', meaning that they automatically side 'with the underdog; against power' (Greco 2017, 225). By this point, Greco contends that the automatic dismissal of a proposition as outrageous can end up strengthening the power relations that rendered a proposition injurious in the first place. Greco then suggests that social scientists learn to hesitate in expressing their outrage in order to gain a better understanding of the contextual reasons behind the impulse for the dismissal of a propositions as outrageous (Greco 2017, 225). The sole reason for this hesitation is to 'become aware of some of its potential unintended consequences; and that we become capable of entertaining the thought that, in a different system of relations, a given proposition might become interesting rather than offensive' (Greco 2017, 225). Much to the fashion outlined above in reference to David Clarke and John Dewey, the aim of hesitation is to discover those habits of thinking that can hinder our thinking differently. The hard part then, as also noted by Greco (2017, 225), in making a speculative proposition, is to formulate them in such a manner that they provide surprise, but not outrage.

Epilogue: caring for uncertainty

We contend that speculation as a balancing act between provoking surprise and avoiding outrage also reflects archaeology's mandate for speculation as simultaneously a privilege and an obligation. The privilege part is characterised by the fact that the vast majority of archaeological questions are of the nature that do not require a concluding verdict as to the correctness of a particular hypothesis. The obligation part denotes a deeper and more ethical consideration of the creative and social aspects of speculation as taking an interest in what can take place between the facts.

We argue that speculation along the lines we carve out is a way of slowing down the pace of archaeological 'discovery'. At a time when scientific advances may lead to a perceived need for establishing 'results' and 'breakthroughs' of new knowledge, we argue that speculation on the interstices between actual facts may be a way of wedging in questions and possibilities that might otherwise be overlooked. Equally, speculation has the quality of leading to less categorical and conclusive rhetoric in archaeology, staging the uncertainties of archaeological knowledge as an inescapable condition of the discipline—a condition to be admitted, embraced, and perhaps even confidently cared for (see also Conley 2016).

What we hope to have illustrated with this article is the potential of speculation observed by most archaeological ‘schools’ from the 19th century to the present day. Despite the often implicit efforts to use the speculative as a springboard for critical archaeological inquiry across these agendas, speculation has nevertheless largely remained a colloquialism for wild conjecture and unsubstantiated guesswork—as synonymous with ‘anything goes’. This perception has led to the clinical separation of two parallel lines of reasoning: the speculative and the factual. As in Euclidian geometry, are these parallel lines of reasoning destined to never meet? What we find hopeful is that, in some non-Euclidian geometries, parallel lines can not only meet, but they can meet an infinite number of times. As one moves towards the horizon in such a geometry, the limit approaches infinity and possibility abounds.

The position one assumes in the space between fact and speculation depends on the extent of one’s tolerance to uncertainty and inconclusiveness. If we were to place different archaeologies in this space, a positivist approach would aim to move towards the centre, minimising speculative risk while maximising evidential strength. A more speculative approach would find itself somewhere closer to the edge, hoping to maximise creative potentiality through ‘an approach that affirms the possible, that actively resists the plausible and the probable targeted by approaches that claim to be neutral’ (Stengers 2010, 57, see also Stengers and Bordeleau 2011, 12). It is this caring for the possible and uncertain that we argue is worth catering for, since it serves not only to probe into other potential narratives than the ones currently agreed upon or canonised, but also because it allows—or forces—archaeology to admit to and foreground the abundance of spaces between the facts, which ought to be foregrounded rather than stowed away.

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