Research Article

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Vagueness, Identity, and the Dangers of a General Metaphysics in Archaeology

Abstract: Archaeology is currently bound to a series of metaphysical principles, one of which claims that reality is composed of a series of discrete objects. These discrete objects are fundamental metaphysical entities in archaeological science and posthumanist/New Materialist approaches and can be posited, assembled, counted, and consequently included in quantitative models (e.g. Big Data, Bayesian models) or network models (e.g. Actor-Network Theory). The work by Sørensen and Marila shows that archaeological reality is not that discrete, that some objects cannot be easily identified, and that perhaps reality is not always necessarily composed of discrete objects. The aim of this article is to take Sørensen and Marila's arguments to their ultimate logical consequences: most archaeological theory today operates under *the illusion of a general metaphysics*. This illusion dictates not only that all of reality is composed of discrete objects, but that since reality manifests in a certain way, there has to be a methodology that accurately represents that reality. A brief discussion on the notion of "conjecture," as conceived in certain historical theories, is also presented.

Keywords: archaeology, objects, metaphysics, vagueness, conjecture

> *Things are what they are, says Dr Kircher, but vagueness is embedded deep within our concepts. It is simply not always clear whether a thing is a mountain or not a mountain, a flower or not a flower, a shoe or not a shoe – or, indeed, a table or not a table. That is why, when God wants clarity, he speaks in numbers.*

> *Tyll*, Daniel Kehlmann

1 Introduction

One of the key topics of interest in archaeological theory today is metaphysics, sometimes expressed as ontology. The term "ontology" has a varied number of meanings in archaeology, from just designating the material world to designating the alterity of past (and present) informants;[1] however, what this article addresses is ontology in terms of metaphysics, that is to say, the deeper noumenal reality (or realities) that is common to us all.

    This idea of a deeper reality has always been a part of the relationship between philosophy and the sciences; for science to be possible, it is assumed that reality must exist in a certain way, a way that is not immediately obvious to experience and it is through science that a deeper reality is exposed and explained. This way of thinking can be traced back to the beginnings of science, but it fell out of favour in the early

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[1] Alberti, "Archaeologies of Ontology;" and Ribeiro, "Ontologies."

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twentieth century. For instance, the neopositivists did not believe metaphysical statements were of any importance to science – metaphysical statements were logically coherent, but they were not empirically relevant.[2] Supporters of ordinary language philosophy were also not concerned with metaphysics as they believed that it was not the task of philosophy to reveal the deeper noumenal reality that underlies phenomena. As Wittgenstein states, philosophy does not explain, since everything lies open to view – what is hidden is of no interest to philosophy.[3]

In more recent times, the idea of a deeper metaphysical reality has taken the academic world by storm. Through the pioneering work of Roy Bhaskar[4] in the late 1970s, the sciences have advanced the idea that scientific enterprises are successful when we recognize the general metaphysics underlying the phenomenal reality we aim to explain. This is true of the natural sciences, where some thinkers assume that a general metaphysics of causal powers[5] is necessary, but it is also true of the social sciences, where some thinkers believe that emergent social practices are fundamental.[6] Regardless of where the metaphysical assumptions stem from, there is an attitude among many theorists in different scientific fields that we need clear, coherent, and general metaphysical commitments. In archaeology, these metaphysical commitments have manifested primarily through two mediums: through archaeological science and, more recently, through the adoption of New Materialist theories. Let us break down what this entails for the discipline.

While science has been a part of archaeology for most of its history,[7] it has had a very significant impact in the last decade.[8] Depending on who is writing, the emergence of archaeological science in archaeology can be viewed very differently, with some authors openly embracing it[9] while others have reported mixed feelings about it. When it comes to science, we can break the implications of its growth in archaeology down to two main levels, a technical level and a theoretical level. At the technical level, few would disagree that the scientific techniques incorporated into archaeology are of great benefit to the progress of the discipline, techniques such as isotope analysis, aDNA analysis, and digital analysis.

Nevertheless, while these scientific techniques have enabled archaeologists to put migration and mobility back on the archaeological agenda,[10] have allowed a more precise reconstruction of past diet strategies,[11] and have provided insights into large demographic processes in prehistory,[12] several problems have also been highlighted as to how these techniques can undermine the practice of archaeology. For example, given the rather high-price tag attached to these techniques, archaeological science can widen the gap that separates how richer regions (e.g. Northern Europe and US) and poorer regions (e.g. Southern Europe and Latin America) practice archaeology.[13] Another gap that seems to be emerging is one that separates those trained in the natural sciences and those in the cultural and social sciences, with archaeologists around the world forcing themselves to choose between studying and progressing as natural scientists or as cultural scientists.[14] Although there are no direct statistics, it seems that there is an increasing number of archaeologists who are developing their careers with the natural sciences in mind,

2 Sprigge, "Has Speculative Metaphysics," 518.
3 Wittgenstein, *Philosophical Investigations*, §126.
4 Bhaskar, *A Realist Theory of Science* and *The Possibility of Naturalism*.
5 E.g. Bhaskar, *A Realist Theory of Science*, 35.
6 E.g. Lawson, "Comparing Conceptions," 360.
7 Kristiansen, "Towards a New Paradigm?"
8 Killick, "The Awkward Adolescence."
9 E.g. Kristiansen, "Towards a New Paradigm?"
10 E.g. Furholt, "Massive Migrations?;" Haak et al., "Massive Migration from the Steppe;" Olalde et al., "The Beaker Phenomenon." Migration and mobility were popular areas of research in archaeology during the first half of the twentieth century, but they lost popularity following this period.
11 E.g. Schoeninger, "Stable Isotope Analyses and the Evolution of Human Diets."
12 E.g. Shennan, "Regional Population Collapse."
13 See González-Ruibal, "Archaeological Revolution(s);" and Ribeiro, "Science, Data, and Case-Studies."
14 See Arkush, "Explaining the Past in 2010;" and Stanton, "Concepts of Determinism."

given that large-scale funding in archaeology currently favours projects based on natural scientific techniques, as opposed to research in the cultural sciences.[15]

These are just some of the problems generated by the direct use of scientific techniques in archaeology; another set of problems are those concerning the theory involved with the use of scientific techniques. On that front, several problems have also been highlighted from the abuse of the term "interdisciplinarity," which favours natural science in detriment of social and cultural research,[16] and the reduction of all archaeological data to those elements that are "determinate," "quantitative," and "objective." Lost in the encroaching process of scientization of archaeology is explanatory nuance[17] and ambiguity.[18]

But it is not just the encroachment of science that has altered archaeological practice; the rise of the New Materialisms,[19] which includes actor-network theory, assemblage theory, and object-oriented ontology, has also altered archaeology in many impactful ways. In general, it can be said that the New Materialisms has set an agenda for archaeology according to four principles: (1) it has removed humans, especially the post-enlightenment ideal of man, from its ontological perch,[20] and it has recognized that humans are not privileged subjects acting upon passive objects; (2) New Materialists have also emphasized that many dualisms on which modern perceptions are based, dualisms such as mind–body, nature–culture, and subject–object, are processes of "purifications" meant to cleave the ontological realm cleanly into two parts;[21] (3) many New Materialists (though not all) have also been adamant in emphasizing the relational nature of reality,[22] leading to the widespread adoption of network approaches in archaeology;[23] and finally (4) New Materialists, especially those associated with object-oriented ontology,[24] have emphasized the existence of objects in their own right, rather than just as a by-product of relations or human symbolic systems. Many of these ideas and their application in archaeology have been critiqued,[25] namely, in relation to how power and domination create asymmetries that are not recognized by the New Materialisms.

This is the current state of the art of the discipline. It must be reminded that the current emphasis on archaeological science and the rise of the New Materialisms in archaeology impact the discipline differently and in varying degrees. For instance, while archaeological science has been embraced by most practitioners around the world, the impact of the New Materialisms has been more modest, it is being primarily accepted among theorists based in the UK, North America, and Scandinavian countries. Additionally, as stated above, the application of archaeological scientific techniques is largely dependent on how much funding one can obtain whereas the research conducted by the New Materialisms is not. Nevertheless, despite the fact archaeological science and the New Materialisms originate from completely different quarters, with some proponents of each of these trends critiquing each other at times,[26] one can recognize some similarities when it comes to their metaphysical commitments.

What are these similarities? Let us start with science. A big part of what sustains science is its tendency to reduce reality into well-determined objects that can be objectified, quantified, and analysed. While one can read this as the "fetishization" of data,[27] it is also possible to recognize this tendency towards determinacy as the fetishization of techniques and skills derived from the natural sciences. More appealing than

15 See Ion, "How Interdisciplinary is Interdisciplinarity?;" and Sørensen, "The Two Cultures and a World Apart," 104.

16 Ribeiro, "Science, Data, and Case-Studies."

17 Ion, "Beyond Determinism."

18 Sørensen, "In Praise of Vagueness."

19 Although many authors would argue against this, for the sake of simplicity, I have included the vast majority of posthumanist approaches under the label "New Materialisms."

20 Braidotti, *The Posthuman*; and Thomas, "Archaeology's Humanism."

21 Latour, *We Have Never Been Modern*, 10–1.

22 E.g. Harris, "Assemblage;" and Watts, "Relational Archaeologies."

23 E.g. Hodder, *Entangled*; and Van Oyen, "Actor-Network."

24 E.g. Edgeworth, "Grounded Objects."

25 E.g. Barrett, "The Material Constitution;" Ribeiro, "Against Object Agency;" Ribeiro, "Archaeology and the New Metaphysical Dogmas;" and Van Dyke, "Materiality in Practice."

26 See Sørensen, "The Two Cultures and a World Apart" and the associated discussion.

27 Sørensen, "The Two Cultures and a World Apart," 107.

the data itself is its transformation into well-defined categories. A classic example of this type of transformation can be seen in the application of Big Data techniques in archaeology. The term Big Data is somewhat of a misnomer in archaeology, since archaeology has always used Big Data[28] (e.g. *Annales* approach). Furthermore, Big Data, as understood in data science, generally involves data that are very heterogenous, such as Internet data,[29] whereas archaeology does not. In very crass terms, what has made Big Data appealing in archaeology is the transformation of data from one object that is poorly defined into another object that is better defined. It is this skill to transform one thing to another that is fetishized. This drive towards determinacy undergirds the argument that science is objective. It is a feedback loop; science presupposes that the basic building blocks of reality are well determined, and as science progresses and becomes more accurate, it demonstrates that the presupposition that reality is, in fact, well determined is true.[30] In fact, one could also argue the reverse that the move towards determinacy was driven by a desire towards objectivity. This has created a scenario where a large substrate of archaeological practice has become dominated by vast amounts of microdata of very specific past contexts, which are very secure and allow for very safe interpretations.

Throughout recent history of science, we can see the constant push towards identifying better boundaries when it comes to objects of scientific analysis. In archaeology, we have the example of summed calibrated date probability distributions (SCDPDs), which rely on the transformation of archaeological data into radiocarbon dates which, when calculated correctly, can provide insights into demographic trends across the entirety of Europe during several millennia. This however requires reducing humans and their culture to a numerical value. *Prima facie*, there is nothing inherently wrong with this type of research, but there is also nothing that makes this type of research more (or less) scientifically objective than other forms of research – even though this type of research, alongside other quantitative methods, tends to be heavily favoured when it comes to scientific funding. Additionally, one can also interpret what has been called in recent years the "crisis of replicability" in the social sciences as a crisis of scientific objectivity. In 2018, a study was published that tried to replicate the results of 21 social science experiments published in *Nature* and *Science* between 2010 and 2015.[31] This study was only able to replicate the results of 13 of those experiments. Furthermore, the difference in effect measured in these 13 studies was reduced by 50% in relation to their original studies. It can be argued that the failure to replicate results does not undermine objectivity; but on the contrary, it is an indicator of the objectivity of social science, and failure is exactly the path that eventually leads to better science since, as Popper argued, the hallmark of what makes science "scientific" is that scientific results can be falsified.[32] This type of reasoning however is somewhat rhetorical; horoscope predictions can also be falsified;[33] in fact, if horoscope predictions were to be replicated, they might yield the same accuracy as social and psychology studies published in *Nature* and *Science*. Another example comes from the testing of psi capabilities in humans (such as telepathy and extrasensory perception) through psychological studies, i.e., studies that yielded positive results. Bem and Honerton[34] conducted experiments over a vast period of time in order to test whether humans have psi abilities, all of which were done under scientific conditions, with large sample sizes and control groups, and through multiple independent experiments, thus guaranteeing some degree of replicability. In light of these experiments of psi, all of which performed according to approved scientific standards, one would have to accept the fact that either psi capabilities exist in humans or the approved scientific standards are not always as objective as assumed.

As to the New Materialisms, there are some similarities in how they and the natural sciences conceive reality. Many of the sub-theories within the New Materialisms, such as actor-network theory,

28 A classic example of this is the Annales approach in archaeology, Bintliff, *The Annales School and Archaeology*.

29 Snijders et al., "Big Gaps of Knowledge."

30 See Bhaskar, *A Realist Theory of Science*, 79.

31 Camerer et al., "Evaluating the Replicability."

32 Popper, *The Logic of Scientific Discovery*.

33 Thagard, "Why Astrology is a Pseudoscience."

34 Bem and Honerton, "Does Psi Exist?"

object-oriented ontology, and assemblage theory, presuppose the existence of discrete objects. The difference is how those objects are configured within their metaphysics; for the natural sciences, it can be configured in multiple ways, such as radiocarbon dates, causal factors, effects, behaviours, etc. whereas with actor-network theory objects are primarily configured as elements within a network. Overall, for both the natural sciences and the New Materialisms, the objects have to be discrete – causation, for instance, cannot exist if one does not recognize a distinction between causes and effects; similarly, the hybrid network of a man and a gun cannot exist if the man and the gun are not separate metaphysical entities. One could argue that it is in fact metaphysically possible for the cause and the effect or the man and the gun to represent an admixture of elements, but the very concept of "mixture" only makes sense by recognizing different objects that mix. Bear in mind that what is being argued is not that these objects are easy to define, because not all objects are easy to define. For instance, water can manifest in the liquid form, as a solid, or as a gas; nevertheless, we still recognize water as its own element; a metaphysics would not make sense if it could not distinguish water from another object like a human.

Accepting that a water is water or that a human is human might seem something obvious and no respectable metaphysics would be taken seriously if it did not assume that both a cup and John are real objects that exist. Not only are they real, but they can be assembled, objectified, quantified, and analysed. We can perform a science of water – we can measure it, weigh it, and analyse it; we can also perform a science of humans – we can observe them, count them, and put them in networks. It is only by accepting that objects like water and humans are real, and it was determined that science and the New Materialisms are possible.

The question now is what are we to do when confronted with things that cannot be objectified, quantified, and assembled? Things like representations, understandings, and thoughts? How does one quantify the thoughts one had while watching movie or the understanding one had while reading a new book? One way is dogmatism: we can just rid ourselves of these elements and claim they do not exist and that whoever engages with these is an anti-realist. Another way, one I am more sympathetic towards, is recognizing the dangers of these metaphysical assumptions.

The aim of this article is to argue that archaeology, and other disciplines, should be wary of the metaphysics that have taken hold of the sciences. For this, I will evoke the concept of "vagueness," which has already been broached in archaeology by Tim Flohr Sørensen and Marko Marila, and how vagueness leads to certain aspects of the archaeological past that cannot be studied properly by the natural sciences and the New Materialisms. In fact, it is not only that metaphysics can generate problems in archaeology; the very idea *that objects are fully distinct from one another might be an impossibility*.

2 Vagueness, being, and identity

What is vagueness? Although a topic discussed primarily in philosophy, two authors in archaeology, Tim Flohr Sørensen and Marko Marila have recently discussed this concept competently and considered its implications for archaeology. For both Sørensen and Marila,[35] the true nature of vagueness is not important; what is important is that no matter what it is, vagueness is an indispensable part of archaeology, a part that is currently being supressed by the rise of archaeological science. This suppression is unhealthy for the discipline; it cuts out a big part of archaeological practice, especially those practices that involve past (and present) phenomena that are ambiguous and speculative.

However, in the way conceived by both Sørensen and Marila, vagueness is just that: vague. For instance, Sørensen discusses the vagueness in terms of fuzzy edges, like that of clouds:

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35 Marila, "Vagueness and Archaeological Interpretation;" and Sørensen, "In Praise of Vagueness."

> A cloud can be experienced as a vague phenomenon, because we cannot precisely define its edges; or the cloud may be experienced as vague, because it is inherently – ontologically – vague; or clouds are vague, because we lack a mode of representation that describes the extent of the phenomenon adequately.[36]

Sørensen also refers to the example of atmospheres, which are indeterminate and can possibly blur situations and experiences.[37] For his case study, which focused on South Scandinavian passage graves, Sørensen looks into the deposition of human remains within these graves. In particular, he argues whether the fragmentation of the body was not intended to make vague identities, that is, to make the dead ontologically indistinguishable.[38] Ultimately, for Sørensen, South Scandinavian passage graves perhaps were not commemorative places; their reason of existence, perhaps, was to generate perceptual perplexity.[39]

Marila's discussion of vagueness is somewhat different in that he focuses primarily on the relation between vagueness, abduction, and the senses. In the search of a methodology that favours vague phenomena, Marila suggests abduction. In his words

> In archaeology, induction simply allows us to generalise from a set of observations that share some kind of resemblance, while deductive arguments are purely mathematical or so banal that they are uninteresting archaeologically. Abduction, therefore, has a special role in archaeology due to the peculiarity or unexpectedness of some finds and the interconnectedness of a wide variety of materials and processes in the past.[40]

As an example, Marila argues how the sensorial experience of analysing pottery reveals aspects that are simply not quantifiable, aspects such as the texture, the feel, the way certain minerals reflect light, and the smell they produce.[41]

While Sørensen and Marila have captured the essential arguments surrounding vagueness, I feel they could also go further with their arguments. Overall, what both Sørensen and Marila claim is that there is currently a prejudice in archaeology, one that favours that which is determinate. This idea can also be found in Descombes' work:

> More generally, Castoriadis criticizes an intractable prejudice of philosophers and of all those whom they (often unknowingly) inspire: that everything that exists exists in a *determinate* form. Everything that exists is precise, determined, and apprehensible. If by chance something exhibits indetermination, haziness, or vagueness, then that thing has shown itself to be, if not utterly illusory, at least of inferior status.[42]

But I wonder if Sørensen and Marila are making the same argument as Descombes. Perhaps we should look at something else, like the human mind as an example of vagueness. The study of the human mind remains the paradigmatic example of this prejudice towards the determinate. Going through the twentieth-century mental philosophy and cognitive studies, one can recognize the constant defence of the idea that mental states are reducible to discrete brain states,[43] or that culture is reducible to discrete cultural units known as memes, which "leap" from brain to brain.[44] Despite extensive criticism,[45] the old-fashioned Cartesian idea that brains have discrete states and that it controls the body still enjoys widespread credibility both in scientific literature and in popular science.

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36 Sørensen, "In Praise of Vagueness," 748.

37 "In Praise of Vagueness," 750.

38 Ibid., 754.

39 Ibid., 757.

40 Marila, "Vagueness and Archaeological Interpretation," 73.

41 Ibid., 77.

42 Descombes, *The Mind's Provisions*, 240, emphasis in original.

43 E.g. Fodor, "Methodological Solipsism."

44 Dawkins, *The Selfish Gene*, 192.

45 Bennett and Hacker, *Philosophical Foundations*; Descombes, *The Mind's Provisions*; Noë, *Out of our Heads*, Taylor, "The Problem of 'Darwinizing' Culture."

The reason why brain states have been argued to be of crucial importance to science, an argument primarily made by naturalist philosophy, is that brain states allow all mental phenomena to become determinate and through that determinacy they are given scientific objectivity. If mental phenomena can be transformed into brain states, this opens the possibility that human action can be understood not through interview techniques nor historical sources but rather through scalpels or electrodes attached to the brain; and in the process, it becomes possible to remove the contextual haziness that is usually attached to human action.

The problem is that the vagueness associated with the human mind cannot simply be "scienced" away. Before certain scientists and philosophers reduced mental phenomena to brain states, Cartesian philosophy reduced mental phenomena to representations.[46] According to representationalism, the human mind could only know things via the representation or idea of them. Once again, much like the present-day scientism, it was important that mental phenomena could be reduced to something determinable; and in the case of Cartesianism, this determinate object was the representation. The birth of modern phenomenology was crucial in dethroning representationalism, by reviving the defunct concept of intentionality.[47] Through intentionality, we were reminded that what we fear is wolves, not the representation of wolves; similarly, what is visible in Champs-de-Mars is the Eiffel Tower, not the representation of it.[48]

But science has persisted in making things determinate; throughout the twentieth century, naturalists altered intentionality, from its original scholastic context, to suit the needs of determinacy. Intentionality was too vague and hazy and could never become a part of any reputable science unless it could have determinate form. Thus, under the naturalist paradigm, intentionality had to become a process that could be located in the human mind.[49] However, as many philosophers have pointed out, if intentionality is something internal to the human, how can we understand intentional actions determined by external conditions, such as wanting to go to the bank? As Mandelbaum and Descombes have argued, wanting to go to the bank requires knowing norms as to how banks work and what services are provided by them,[50] and these norms are followed and understood by people who have learned about them throughout their lifetime.

Going back to Descombes, the scientific worldview is one that correlates identity with being,[51] that is, if reality cannot be broken down into objects that have context-free identities, then science cannot understand them. Consequently, if science cannot understand them, then they cannot exist. Some basic notions of metaphysics can help us understand where the problem lies. Central to metaphysical identity are three axiomatic laws of thought;[52] the law of identity, the law of non-contradiction, and the law of excluded middle. Now the law of identity states that "whatever is, is;" the law of contradiction states that "nothing can both be or not be;" and the law of excluded middle claims that "everything must either be or not be."[53] Let us use a simple object to explain what these laws entail: a glove is a glove (law of identity); a glove cannot be a glove and not a glove at the same time (law of contradiction); and a glove is either a glove or not, and there cannot be a middle-ground between these two positions (law of excluded middle).

As an enterprise, it seems clear why science requires the laws of thought, either implicitly or explicitly. Causality undergirds science because cause and effect must be both determinate and clearly distinguished from one another in metaphysical terms. Similarly, in philosophy, Quentin Meillassoux's argument in favour of the impossibility of the principle of contradiction can also be read as an indirect support of science.[54] In fact, early on in his book *After Finitude*, Meillassoux defends Locke's separation of primary from secondary qualities. For Meillassoux, primary qualities are those that manifest in quantifiable terms,

46 See Arponen and Ribeiro, "Understanding Rituals."

47 Brentano, *Psychology from an Empirical Standpoint*.

48 Descombes, *Objects of All Sorts*.

49 E.g. Searle, *Intention*.

50 Descombes, *The Mind's Provisions*, xvii, and Mandelbaum, "Societal Facts," 479.

51 Descombes, *The Mind's Provisions*, 241.

52 Boole, "The Laws of Thought."

53 Russell, *The Problems of Philosophy*, 40.

54 Meillassoux, *After Finitude*.

which allow the apprehension of objects independent of the human observer. This, in turn, supports those sciences that deal with objects that can be recognized in mathematical terms.

Regardless of whether Meillassoux is correct in his arguments, two elements that are not encompassed in his perspective of reality are quantum physics and unsortalized things or objects.[55] As a non-expert in quantum physics, I can only surmise that the claim made by Castoriadis "that reality goes beyond the logic of sets – as nuclear physics and cosmology are on the point of rediscovering"[56] means that these sciences are now challenging the very notion that metaphysical being cannot be assigned a fixed identity, even when that being exists in a fixed time and space. Consequently, this means that, against Meillassoux, contradiction is in fact possible. Take the classic example of light in quantum physics, which can manifest as particles or waves but resists a fixed definition as either one,[57] or the example of Shrödinger's Cat, which can be alive and dead at the same time. It bears mentioning that Meillassoux's arguments in *After Finitude* are of a logical kind,[58] whereas discoveries in quantum physics are empirical, meaning that Meillassoux reaches the idea of the impossibility of contradiction through logical argumentation, whereas quantum physics recognizes contradiction empirically. Nonetheless, the fact that quantum physics has opened the possibility of two distinct realms, one where empirical contradiction cannot exist and another where it does, can jeopardize the basis of Meillassoux's arguments. In fact, as Niels Bohr pointed out, the closer science looks at basic units of material existence, the more indeterminate things become.[59]

The second element that cannot be encompassed by Meillassoux's conception of reality are those phenomena or objects that are unsortalized. Here it has been philosophers of language and mind that have been most straightforward and clear in their critique of the determinateness of science. The capacity to count depends on a sortal concept, a concept that reduces the object of analysis into something quantitative. But just because something has been assigned a sortal concept does not mean that it exists metaphysically. Take the example of a deck of cards: if given to somebody and asked, "please show me the number of these," it is not clear whether the number refers to cards, the complete deck, or the honour cards at skat.[60] The fact that we can count a deck of cards in different ways does not mean that each way the deck can be counted corresponds to a different metaphysical being. Similarly, as pointed out by Rorty,[61] one can use the concept of "representation," but it is not possible to quantify how many representations are in a dream or how many representations are present in Géricault's *Raft of Medusa*.[62]

Once we recognize that identity and being are not necessarily equal, it becomes clear that the natural and quantitative sciences, both inside and outside archaeology, are considerably more limited than assumed. But can we not say the same about the New Materialisms? This is perhaps what I feel is missing in Sørensen and Marila's work on vagueness – what vagueness illustrates is a mismatch between identity and being. It is due to this mismatch that I believe the issue at hand concerns metaphysics. Had Sørensen and Marila emphasized this mismatch, they perhaps would have also critiqued the New Materialisms in addition to the natural sciences, because ultimately, vagueness also ends up demonstrating the methodological limitations of the New Materialisms. Just like the natural sciences, The New Materialisms cannot isolate the representations that are present in Géricault's *Raft of Medusa*. What would an actor-network of representations in Géricault's *Raft of Medusa* look like? How could one study the representations through object-oriented ontology[63] if these cannot be broken down into objects? Similarly, how can a Deleuzian assemblage contain emotions for instance,[64] when we cannot separate them from other objects?

55 Brandom, *Making it Explicit*, 438.

56 Castoriadis, *Crossroads in the Labyrinth*, 33.

57 Sørensen, "In Praise of Vagueness," 747.

58 Brassier, *Nihil Unbound*, 58.

59 Barad, *Meeting the Universe Halfway*, 127–8.

60 Brandom, *Making it Explicit*, 438.

61 Rorty, "Brain as Hardware."

62 Descombes, *The Mind's Provisions*, 241.

63 See the study of the Dutch East India Company in Harman, *Immaterialism*.

64 Harris, "Assemblage and Scale," 129.

The issue is not that some objects are fuzzy; the issue is that we do not know *if certain objects are objects in themselves at all*. The example by Brandom is pertinent; is a deck of cards an object or are the individual cards objects? Logically, one falls into several traps no matter how one answers this question: saying that a deck is an object and cards are mere parts of the deck leaves you stranded in a mereological dilemma because someone could then steal just one card from a deck, and it would stop being a deck. Furthermore, one could question whether the joker card is part of the deck or whether it is its own object. One could also argue that the deck and the individual cards are both objects – but would that not mean that we could potentially have infinite objects? Conventionally, a deck contains 52 cards, which would mean that if I have a deck, I do not have 52 separate objects, but rather 53 (52 cards + 1 deck). If I then take some cards from the deck and hold them in my hand, would that not constitute its own objects? Would any combination of cards constitute their own object?

The New Materialist could argue that the only thing that is real are the cards and the deck is illusory – just a human category and not a real thing in itself, to use Kant's famous designation. But then how do we know what constitutes a human category? Is it only the things that are clearly distinguishable? For example, a card is an object that is easily distinguishable, but what about rivers and mountains? Are these real objects or are they just illusions and part of the planet earth? Where do objects like rivers and mountains start and end? It is perhaps here that Meillassoux's work is most relevant: the metaphysics of finitude,[65] that is to say, the metaphysics of discrete objects with beginning and end is ultimately dependent on human thinking.

3 Actors, minds, and conjectures

If we say that two people have the same thought, what does that actually mean? Because saying that two people have the same car is easy to understand, given that "car" is a sortal concept. A "thought" however is a non-sortal concept, one that cannot be reduced, so it would be impossible for two people to have the same thought. Bear in mind that this is not an argument stating that all thoughts are relative, but rather that thoughts cannot be individualized in the same way cars can be.[66] This, of course, begs the question, when two people think "the sky is blue," would that not mean they have the same thought? Well, what they do share is not a "thought" in itself but institutionalized meanings.

This should not be unfamiliar to archaeology since these ideas were in a way the basis of postprocessual archaeology, especially that of Ian Hodder.[67] However, the idea of instituted meanings is perhaps not best exemplified by work on signification by Hodder but rather by the work on practice theory by archaeologists such as John Barrett[68] and anthropologists like Sherry Ortner.[69] For example, Barrett's work heavily emphasized the role of social context in understanding human "thought" as an action, as opposed to the role of brain architecture.[70]

It is perhaps in understanding human action that I think we need to go beyond the idea of vagueness as expressed in Sørensen and Marila's work. Some caveats must be established before moving on: it is uncontroversial, I believe, to say that humans, as a species and not as specific social entities, are animals that have evolved through an evolutionary process and have developed cognitive capacities that has helped them survive, one of those capacities being empathy[71] or perhaps in even more complex terms: moral thinking.[72] However, just because our capacity for morality as a species might have derived from evolution

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65 Meillassoux, *After Finitude*.

66 Descombes, *The Institutions of Meaning*.

67 Hodder and Hutson, *Reading the Past*.

68 Barrett, "Fields of Discourse;" Barrett, *Fragments from Antiquity*.

69 Ortner, *Anthropology and Social Theory*.

70 Barrett, "The Archaeology of Mind."

71 Ibid., 8.

72 Tomasello, *A Natural History*.

does not mean that all moral acts can be explained by means of evolutionary theory. To use an analogy: to understand why humans drive cars requires explaining the role of car technology, industrial production, the economics of travel, etc. but explaining why a person wants to drive to the airport requires understanding the context of that specific intention, not the history of cars. Similarly, understanding moral behaviour does not necessarily entail explaining how we became a "moral species."

What this means is that archaeology does not necessarily require reconstructing the general processes by which we became social, economic, or moral, but rather the specific historical and social contexts in which human action manifests.[73] Granted, I do respect those archaeologists who enquire on the general processes and who take the time to understand how we became "human" or "social" – but these general processes, those that are common to us as a species, cannot explain specific archaeological realities.

For example, emergence, and its more specific variant, supervenience, are unable to explain human action in its specificity. In a recent discussion on social ontology, John Searle described Tony Lawson's conception of emergence as the process by which a lower ontological stratum creates a higher level through mechanisms of the lower level; this higher level is of a different complexity and entails causal powers that are irreducible to the lower level but that cannot change the lower level.[74] Colin Wight, also part of the same discussion, has pictured emergence as the process by which the quantum level gives rise to the material level, the material level to the chemical level, the chemical level to the biological level, the biological level to the human level, and a social level emerges out of the human level. This seems fairly straightforward, but as Wight points out, at the social level, social norms and relations can manifest in vastly different ways, norms, and relations that depend on the relative position of social actors.[75] In conclusion, despite the fact that human action exists because of lower ontological levels, one cannot reduce it to those levels.

Going back to the topic of thoughts and how there cannot be two people with the same thought, it seems clear that having a specific thought can never be because the thought supervenes on a biological or human level, but because the actor who has had the thought is in social position, a field of discourse[76] or within a "serious game,"[77] where it made sense to have that thought.

The reason I bring these topics up is because it harkens back to the idea of vagueness. In addition to vagueness, Sørensen and Marila also refer to "conjecture," "ambiguity," and "uncertainty," which are not synonymous with "vagueness." In particular, I would like to address the term "conjecture" and give it a little more context, with the idea of social action as understood by Barrett and Ortner in mind. To start this section, I would like to address Sørensen's quote that evokes Carlo Ginzburg's epistemology:

> Most crucially, explicitly sustaining the uncertainty of knowledge – whether through formal academic research or an infusion with art – serves to challenge the arrogance of presuming that we can arrive at absolute archaeological knowledge of the past through the accumulation of evidence, falsification, and validation. Archaeology may have a particular need for admitting to and owning up to its inevitably uncertain epistemology, following Carlo Ginzburg's contention that 'historical knowledge is indirect, presumptive, conjectural.[78]

Although I agree with Sørensen's point, with Ginzburg and conjecture we might have gone beyond the issue of vagueness, identity, and being, as discussed in the previous section of this article. We are not dealing now with the metaphysical basis on which science is based, but rather with the issue concerning what qualifies as an explanation or interpretation in a discipline such as archaeology. What makes Carlo Ginzburg such a fascinating figure in cultural research is the fact that his ideas were so different and radical from his contemporaries that both his detractors and supporters would usually misunderstand him. For instance, although Ginzburg's work is usually referred to as microhistory and the micro-scale is usually

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73 Barrett, *Fragments from Antiquity*, 1–4.

74 Searle, "The Limits of Emergence," 406.

75 Wight, "Over Socialising," 418.

76 Barrett, "Fields of Discourse."

77 Ortner, *Anthropology and Social Theory*.

78 Sørensen, "The Triviality of the New," 104.

emphasized when commenting on his work,[79] Ginzburg only started addressing the micro-scale several decades after he started working.[80] Furthermore, it is not so much the micro-scale in itself that he is interested in, but rather the history of *mentalities*. As a follower of Siegfried Kracauer's work on history,[81] what matters is not so much the micro-scale, but the back and forth between the micro and the macro.[82] This is best understood in Ginzburg's seminal *The Cheese and the Worms*,[83] where the actions of the protagonist, the miller Menocchio, are not only interesting in themselves, but as a particular example of the dissatisfaction with the Catholic Church inspired by the Reformation.

It is precisely in books like *The Cheese and the Worms* where the term "conjectural" makes most sense. In a similar tone to Natalie Zemon Davis' *The Return of Martin Guerre*[84] (1983), the problem faced by these types of historical works, ones which reconstruct very detailed events based on scarce evidence, is that there is no actual *proof* that the events described in these books took place. It is precisely when talking about the *Return of Martin Guerre* that Ginzburg establishes some fundamental distinctions that I feel both Sørensen and Marila would agree with: that which separates *true* and *invented* and that which separates *reality* and *possibility*.[85] If archaeology was exclusively a scientific enterprise that only dealt with absolute knowledge, if archaeology aims towards absolute knowledge,[86] then it would make sense to differentiate very clearly between what is actually "true" or "false." And to be honest, a large part of archaeology would still need to operate according to this distinction. However, when talking about past human actions, rather than "true" or "false," the most adequate terms to use are "reality" and "possibility."

The dialectic between reality and possibility is a fascinating one. As Alessandro Manzoni explains, at the heart of the historical novel is the need to provide both factual and verisimilar circumstances[87] – not invention in the strict sense of the word, but rather what is likely to have happened. It is here that I feel that Marila's comments on abductive reasoning,[88] in understanding the past, are of greatest value. This dialectic is important because, as Hayden White states, the aim of history is not truth but rather *realism*[89] – or to put it more simply, the past should be reconstructed in a realistic fashion, but not necessarily in a truthful way.

It is with the ideas of reality and possibility in mind that I feel it makes considerably more sense to refer to "conjecture" when thinking about the diverse possibilities of past action. If we are to assign some degree of freedom to past actors, depending on their social–historical context, we cannot but assume that there would have been choices made by these actors that could have led to very different historical scenarios. It is in this sense that we discuss the possibilities of past human action.[90] Now, in a general sense, this is what both Sørensen and Marila refer to as the vagueness of the past, but whereas the term "vagueness" might be best used to refer to issues of being and identity, "conjecture" might be more relevant to past action and historical outcome.

As a conclusion to this section, we have found ourselves once again highlighting another aspect of past reality that is not easily captured by the scientific methodologies and the techniques currently prevailing in archaeological practice. Whereas the previous section emphasized the problems with reducing reality to determinate sortal categories, this section emphasized the importance of conjecture in providing realistic, although not necessarily truthful, representations of the past. What does all this mean to the practice of archaeology in general?

79 Levi, "On Microhistöry;" Sigurður and Szíjártó, *What is Microhistory?*

80 Ginzburg, "Microhistory."

81 Kracauer, *History*.

82 Brown, "Microhistory;" Ginzburg, "Microhistory," 27.

83 Ginzburg, *The Cheese and the Worms*.

84 Davis, *The Return of Martin Guerre*.

85 Ginzburg, *Threads and Traces*, 57.

86 Sørensen, "The Triviality of the New," 104.

87 Manzoni, *On the Historical Novel*, 67.

88 Marila, "Vagueness and Archaeological Interpretation."

89 White, *Metahistory*.

90 Ribeiro, "Microhistory and Archaeology."

4 The illusion of a general metaphysics

More important than recognizing vagueness is recognizing that there cannot be a single universal metaphysics that can be upheld above everything else. The issue concerns not a specific metaphysics *per se* but the *idea of a general metaphysics*.

This brings us back to the issue broached in the introduction, namely, the New Materialism and its influence in archaeology, which in some of its more specific manifestations, have relied on a general metaphysics, such as a metaphysics of assemblages[91] or objects.[92] If reality is *de facto* vague, the idea that there are objects fully distinct from one another might be a metaphysical impossibility.

If anything, the metaphysical concept of "vagueness" supports a Heraclitean philosophy: a philosophy that recognizes reality as ultimately indistinguishable, as something that is in constant flux.[93] Could this mean that objects can still be distinct but nonetheless somehow connected to each other? Possibly, but as Terrence Horgan and Matjaž Potr have argued, a more parsimonious metaphysics that acknowledges vagueness is one that recognizes reality as a single substance and the only one true object that has well-defined borders is the universe in its entirety, from the "beginning" of time until its "end;" the universe is the only object that manifests finitude *strictu sensu*.[94] This is also the idea behind David Lewis' Humean Supervenience, in which the universe in its entirety manifests as a mosaic of local matter of empirical facts.[95] Not only is the parsimonious character of these metaphysics appealing, they overcome several long-standing issues in metaphysical enquiry, such as mereological issues,[96] particular vs universals,[97] and fundamentality.[98] However, committing to the minimalist monism of Horgan and Potr, and taking it seriously from a scientific standpoint, would mean having to uncover how it is possible that everything is just one single object and how scientific truth and realism are possible.

The issue is not metaphysics *per se* but rather dictating archaeological research in accordance with a metaphysics. The problem of the bias towards the determinate in the hard sciences is not that the metaphysics of the determinate is wrong; the problem is that it constrains archaeological methodologies that can be thought of, discussed, and employed. Similarly, if archaeologists were to fully support a metaphysics of monistic substance, we would continue methodologically constrained. For instance, one of the more popular philosophies in archaeology is the Speculative Realism of Graham Harman,[99] or more specifically, his object-oriented ontology.[100] With Harman we witness a classic case of how a general metaphysics can impact how scholars decide to do research, in that there is reference to the metaphysical realm through the Kantian noumenal,[101] which is inaccessible, but nevertheless entails a phenomenal version that can be observed.[102] Regardless of whether I agree with this metaphysics, it narrows down how we approach reality as researchers, given that Harman's metaphysics dictates what is or is not metaphysically real and worthy of study. As the speculative turn has emphasized, the focus on subjectivity, death, and culture are manifestations of anti-realism – a drawback from reality in material form.[103]

The question we are faced with is how can one perform an archaeology that is rich, inclusive, and multi-disciplinary, if we are to only research that which is dictated as real by an exclusive general metaphysics? How is archaeology to be performed without culture, death, and subjectivity? The answer is it

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91 Hamilakis and Jones, "Archaeology and Assemblage;" Harris, "Assemblage."
92 Pétursdóttir, "Climate Change?;" Pétursdóttir and Olsen, "Theory Adrift."
93 Heraclitus, *Fragments*.
94 Horgan and Potrč, *Austere Realism*.
95 Lewis, *Philosophical Papers II*, ix–x.
96 Simons, *Parts*; Van Inwagen, "When Are Objects Parts."
97 Armstrong, *Universals*.
98 Schaffer, "Is There a Fundamental Level?"
99 Harman, "Current State."
100 Harman, *Tool-Being*; Harman, *Immaterialism*; Harman, *Object-Oriented Ontology*.
101 Harman, *Immaterialism*, 27.
102 Harman, *Object-Oriented Ontology*, 12; Sørensen, "The Triviality of the New," 102.
103 Bryant et al., *The Speculative Turn*, 4.

cannot. This is because in addition to the bias that reality can be subsumed to a general metaphysics, a second more pervasive bias arises from the first: that which dictates "if reality is *x*, then it must be understood through *y*." This bias is a logical fallacy because it takes the results of observation first, and from that observation it establishes a general metaphysics, which in turn dictates how one can understand reality. If there is one bias that has hindered archaeological theorization more than any other bias, it is perhaps this one.

In all fairness to Harman, as a philosopher, his main concern is philosophy, and the transfer of his ideas into archaeology has been performed by archaeologists alone.[104] Nevertheless, Harman has produced an approach to reality in his object-oriented study of the Dutch East India Company (VOC), a very interesting case study, which at face value is fully compatible with the aims of archaeological research.[105] However, this type of research is similar to most historical and object-based research that has been applied to archaeological reality, such as the seminal work on object biography by Igor Kopytoff,[106] the cultural biography of the Bradbourne cross by John Moreland,[107] and the singularization of the small and the ordinary by Kristján Mímisson and Sigurður Gylfi Magnússon.[108] The difference is that these latter authors arrived at their methods and results not by subservience to a metaphysics but figuring out what works best in their own individual cases and based on their interests. To join my voice to that of Pétursdóttir and Olsen,[109] I wonder what the study of the Dutch East India Company would look like if it were not constrained? What would archaeology be if one could study the past in whatever way they wanted, without worrying about funding, job precarity, commitments to notions of absolute truth, and, of course, the dictates of a general metaphysics?

As stated elsewhere, metaphysics cannot dictate how we, as archaeologists, do our jobs.[110] This does not mean disengaging from metaphysical speculation, since it can be a helpful form of theorization when performed thoughtfully, nor does this mean that having a series of ontological commitments is automatically harmful. What is harmful is believing that one is upholding the one true metaphysics of everything. A better path I believe, at least from an archaeological standpoint, is reasserting the idea of methodological pluralism,[111] or perhaps even, methodological anarchism.[112] Ultimately, archaeology remains a practice where methodology and methods play a large role, and these methodologies and methods can manifest not only in the form of very stringent scientific techniques, but it can also manifest as forms of discourse and modes of thought. With this idea in the back of our minds, I hope we can theorize archaeology and conduct archaeological research in a more productive way.

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104 E.g. Edgeworth, "Grounded Objects;" Pétursdóttir, "Climate Change?"
105 Harman, *Immaterialism*, 35ff; Harman, "The Coldness of Forgetting."
106 Kopytoff, "The Cultural Biography of Things."
107 Moreland, "The World(s) of the Cross."
108 Mímisson and Magnússon, "Singularizing the Past."
109 Pétursdóttir and Olsen, "Theory Adrift."
110 Ribeiro, "Archaeology and the New Metaphysical Dogmas."
111 Von Wright, *Explanation and Understanding*.
112 Feyerabend, *Against Method*.

References

Alberti, Benjamin. "Archaeologies of Ontology." *Annual Review of Anthropology* 45:1 (2016), 163–79.

Arkush, Elizabeth. "Explaining the Past in 2010." *American Anthropologist* 113 (2011), 200–212.

Armstrong, D. M. *Universals: An Opinionated Introduction*. Boulder, CO: Westview Press, 1989.

Arponen, V. P. J. and Ribeiro, Artur. "Understanding Rituals: A Critique of Representationalism." *Norwegian Archaeological Review* 47 (2014), 161–79.

Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press, 2007.

Barrett, John C. "Fields of Discourse: Reconstituting a Social Archaeology." *Critique of Anthropology* 7 (1988), 5–16.

Barrett, John C. *Fragments from Antiquity: An Archaeology of Social Life in Britain, 2900–1200 BC*. Oxford and Cambridge, MA: Blackwell, 1994.

Barrett, John C. "The Archaeology of Mind: It's Not What You Think." *Cambridge Archaeological Journal* 23 (2013), 1–17.

Barrett, John C. "The Material Constitution of Humanness." *Archaeological Dialogues* 21 (2014), 65–74.

Bem, Daryl J. and Honorton, Charles. "Does Psi Exist? Replicable Evidence for an Anomalous Process of Information Transfer." *Psychological Bulletin* 115 (1994), 4–18.

Bennett, Maxwell and Hacker, P. M. S. *Philosophical Foundations of Neuroscience*. Malden, MA and Oxford: Blackwell, 2003.

Bhaskar, Roy. *A Realist Theory of Science*. London and New York: Routledge, 2008 [1977].

Bintliff, John. *The Annales School and Archaeology*. Leicester: Leicester University Press, 1991.

Boole, George. *An Investigation of the Laws of Thought, on which are Founded the Mathematical Theories of Logic and Probabilities*. London: Walton and Maberly, 1854.

Braidotti, Rosi. *The Posthuman*. Cambridge and Malden, MA: Polity Press, 2013.

Brandom, Robert. *Making it Explicit: Reasoning, Representing, and Discursive Commitment*. Cambridge, MA and London: Harvard University Press, 1994.

Brassier, Ray. *Nihil Unbound: Enlightenment and Extinction*. Basingstoke: Palgrave Macmillan, 2007.

Brentano, Franz. *Psychology from an Empirical Standpoint*. London and New York: Routledge, 2015 [1874].

Brown, Richard D. "Microhistory and the Post-Modern Challenge." *Journal of the Early Republic* 23 (2003), 1–20.

Bryant, Levi, Srnicek, Nick, and Harman, Graham. *The Speculative Turn: Continental Materialism and Realism*. Melbourne: re. press, 2011.

Camerer, Colin F., Dreber, Anna, Holzmeister, Felix, et al. "Evaluating the Replicability of Social Science Experiments in Nature and Science between 2010 and 2015." Nature: Human Beahavior 2 (2018), 637–44.

Castoriadis, Cornelius. *Crossroads in the Labyrinth*. Cambridge, MA: The MIT Press, 1984.

Davis, Natalie Zemon. *The return of Martin Guerre*. Cambridge, MA and London: Harvard University Press, 1983.

Dawkins, Richard. *The selfish gene*. Oxford: Oxford University Press, 2006 [1976].

Descombes, Vincent. *Objects of All Sorts: A Philosophical Grammar*. Oxford: Basil Blackwell, 1986.

Descombes, Vincent. *The Mind's Provisions: A Critique of Cognitivism*. Princeton, NJ and Oxford: Princeton University Press, 2001.

Descombes, Vincent. *The Institutions of Meaning: A Defense of Anthropological Holism*. Cambridge, MA and London: Harvard University Press, 2014.

Edgeworth, Matt. "Grounded Objects. Archaeology and Speculative Realism." *Archaeological Dialogues* 23 (2016), 93–113.

Feyerabend, Paul. *Against Method*. London and New York: Verso, 2010 [1975].

Fodor, Jerry A. "Methodological Solipsism Considered as A Research Strategy in Cognitive Psychology." *Behavioral and Brain Sciences* 3 (1980), 63–73.

Furholt, Martin. "Massive Migrations? The Impact of Recent aDNA Studies on our View of Third Millennium Europe." *European Journal of Archaeology* 21 (2017), 1–33.

Ginzburg, Carlo. *The Cheese and the Worms: The Cosmos of A Sixteenth-century Miller*. Baltimore, MD: Johns Hopkins University Press, 1980.

Ginzburg, Carlo. "Microhistory: Two or Three Things That I Know about It." *Critical Inquiry* 20 (1993), 10–35.

Ginzburg, Carlo. *Threads and Traces: True False Fictive*. Berkeley: University of California Press, 2012.

González-Ruibal, Alfredo. "Archaeological Revolution(s)." *Current Swedish Archaeology* 22 (2014), 41–5.

Haak, Wolfgang, Lazaridis, Iosif, Patterson, Nick, et al. "Massive Migration from The Steppe was a Source for Indo-European Languages in Europe." *Nature* 522 (2015), 207–11.

Hamilakis, Yannis and Jones, Andrew Meirion. "Archaeology and Assemblage." *Cambridge Archaeological Journal* 27 (2017), 77–84.

Harman, Graham. *Tool-being: Heidegger and the Metaphysics of Objects*. Chicago and La Salle, IL: Open Court, 2002.

Harman, Graham. "The Current State of Speculative Realism." *Speculations: A Journal of Speculative Realism* IV (2013), 22–8.

Harman, Graham. *Immaterialism: Objects and Social Theory*. Malden, MA: Polity, 2016.

Harman, Graham. *Object-oriented Ontology: A New Theory of Everything*. London: Pelican Books, 2017.

Harman, Grahm. "The Coldness of Forgetting: OOO in Philosophy, Archaeology, and History." *Open Philosophy* 2 (2019), 270.

Harris, Oliver J. T. "Assemblages and Scale in Archaeology." *Cambridge Archaeological Journal* 27:1 (2017), 127–39.

Harris, Oliver J. T. "Assemblage." In *The Encyclopedia of Archaeological Sciences*, edited by Sandra L. Lopez Varela, [online]. Hoboken, NJ: Wiley, 2018.

Heraclitus. *Fragments*. New York and London: Penguin Books, 2003.

Hodder, Ian. *Entangled: An Archaeology of the Relationships between Humans and Things*. Malden, MA: Wiley-Blackwell, 2012.

Hodder, Ian and Hutson, Scott. *Reading the Past: Current Approaches to Interpretation in Archaeology*. Cambridge: Cambridge University Press, 2003.

Horgan, Terrence and Potrč, Matjaž. *Austere Realism: Contextual Semantics Meets Minimal Ontology*. Cambridge, MA: MIT Press, 2008.

Ion, Alexandra. "How Interdisciplinary is Interdisciplinarity? Revisiting the Impact of aDNA Research for the Archaeology of Human Remains." *Current Swedish Archaeology* 25 (2017), 177–98.

Ion, Aexandra. "Beyond Determinism: A Case for Complex Explanations and Human Scale in Framing Archaeological Causal Explanations." *Archaeological Dialogues* 26 (2019), 10–12.

Killick, David. "The Awkward Adolescence of Archaeological Science." *Journal of Archaeological Science* 56 (2015), 242–47.

Kopytoff, Igor. "The Cultural Biography of Things: Commoditization as a Process." In *The Social Life of Things*, edited by Arjun Appadurai, 64–91. Cambridge: Cambridge University Press, 1986.

Kracauer, Siegfried. *History: The Last Things Before the Last*. Princeton, NJ: Markus Wiener Publishers, 1969.

Kristiansen, Kristian. "Towards A New Paradigm: The Third Science Revolution and its Possible Consequences in Archaeology." *Current Swedish Archaeology* 22 (2014), 11–34.

Latour, Bruno. *We Have Never Been Modern*. New York and London: Harvester Wheatsheaf, 1993.

Lawson, Tony. "Comparing Conceptions of Social Ontology: Emergent Social Entities and/or Institutional Facts?" *Journal for the Theory of Social Behaviour* 46:4 (2016), 359–99.

Levi, Giovanni. "On microhistory." In *New Perspectives on Historical Writing*, edited by Peter Burke, 97–119. Cambridge: Polity Press, 1991.

Lewis, David K. *Philosophical Papers – Vol. II*. New York and Oxford: Oxford University Press, 1986.

Mandelbaum, Maurice. "Societal Facts." In *Theories of History*, edited by Patrick Gardiner, 476–88. Glencoe The Free Press, 1959.

Manzoni, Alessandro. *On the Historical Novel*. Lincoln, NE and London: University of Nebraska Press, 1984.

Marila, Marko. "Vagueness and Archaeological Interpretation: A Sensuous Approach to Archaeological Knowledge Formation through Finds Analysis." *Norwegian Archaeological Review* 50 (2017), 66–88.

Meillassoux, Quentin. *After Finitude: An Essay on the Necessity of Contingency*. London: Continuum, 2008.

Mímisson, Kristyán and Magnússon, Sigurður Gylfi. "Singularizing the Past: The History and Archaeology of the Small and Ordinary." *Journal of Social Archaeology* 14 (2014), 131–56.

Moreland, John. "The World(s) of the Cross." *World Archaeology* 31 (1999), 194–213.

Noë, Alva. *Out of Our Heads: Why You are Not Your Brain, and Other Lessons from the Biology of Consciousness*. New York: Hill and Wang, 2009.

Olalde, Iñigo, Brace, Selina, Allentoft, Morten E., et al. "The Beaker Phenomenon and the Genomic Transformation of Northwest Europe." *Nature*, 555 (2018), 190–6.

Ortner, Sherry B. *Anthropology and Social Theory: Culture, Power, and the Acting Subject*. Durham, NC and London: Duke University Press, 2006.

Pétursdóttir, Þóra. "Climate change? Archaeology and Anthropocene." *Archaeological Dialogues* 24 (2017), 175–205.

Pétursdóttir, Þóra and Olsen, Bjørnar. "Theory Adrift: The Matter of Archaeological Theorizing." *Journal of Social Archaeology* 18 (2017), 97–117.

Popper, Karl R. *The Logic of Scientific Discovery*. London and New York: Routledge, 2002 [1935].

Ribeiro, Artur. "Against Object Agency. A Counterreaction to Sørensen's 'Hammers and Nails'." *Archaeological Dialogues* 23 (2016), 229–35.

Ribeiro, Artur. "Science, Data, and Case-Studies under the Third Science Revolution: Some Theoretical Considerations." *Current Swedish Archaeology* 27 (2019), 29–46.

Ribeiro, Artur. "Archaeology and the New Metaphysical Dogmas: Comments on Ontologies and Reality." *Forum Kritische Archäologie* 8 (2019), 25–38.

Ribeiro, Artur. "Microhistory and Archaeology: Some Comments and Contributions." *Papers from the Institute of Archaeology* 28 (2019), 1–26.

Rorty, Richard. "The Brain as Hardware, Culture as Software. Symposium: Vincent Descombes, The Mind's Provisions." *Inquiry - An Interdisciplinary Journal of Philosophy* 47 (2004), 219–35.

Russell, Bertrand. *The Problems of Philosophy*. Oxford: Oxford University Press, 2001 [1912].

Schaffer, Jonathan. "Is there a fundamental level?" *Nous* 37 (2003), 498–517.

Schoeninger, Margaret J. "Stable Isotope Analyses and the Evolution of Human Diets." *Annual Review Anthropology* 43 (2014), 413–30.

Searle, John R. *Intentionality: An Essay in the Philosophy of Mind*. Cambridge: Cambridge University Press, 1983.

Searle, John R. "The Limits of Emergence: Reply to Tony Lawson." *Journal for the Theory of Social Behaviour* 46 (2016), 400–12.

Shennan, Stephen. "Demographic Continuities and Discontinuities in Neolithic Europe: Evidence, Methods and Implications." *Journal of Archaeological Method and Theory* 20 (2013), 300–11.

Sigurður, Sigurður Gylfi and Szíjártó, István M. *What is Microhistory? Theory and Practice*. London and New York: Routledge, 2013.

Simons, Petert M. *Parts: A Study in Ontology*. New York and Oxford: Oxford University Press, 2000.

Snijders, Chris, Matzat, Uwe, and Reips, Ulf-Dietrich. "'Big Data': Big Gaps of Knowledge in the Field of Internet Science." *International Journal of Internet Science* 7 (2012), 1–5.

Sørensen, Tim Flohr. "In Praise of Vagueness: Uncertainty, Ambiguity and Archaeological Methodology." *Journal of Archaeological Method and Theory* 23 (2016), 741–63.

Sørensen, Tim Flohr. "The Two Cultures and a World Apart: Archaeology and Science at a New Crossroads." *Norwegian Archaeological Review* 50 (2017), 101–15.

Sørensen, Tim Flohr. "The Triviality of the New: Innovation and Impact in Archaeology and Beyond." *Current Swedish Archaeology* 26 (2019), 93–117.

Sprigge, Timothy Lauro Squire. "Has Speculative Metaphysics a Future?" *The Monist* 81:4 (1998), 513–33.

Stanton, Travis W. "Concepts of Determinism and Free will in Archaeology." *Anales de Antropología* 38 (2004), 29–83.

Taylor, Timothy. "The Problem of 'Darwinizing' Culture (or Memes as the New Phlogiston)." In *Evolution 2.0: Implications of Darwinism in Philosophy and the Social and Natural Sciences*, edited by Martin Brinkworth and Friedel Weinert, 65–82. Berlin and Heidelberg: Springer, 2012.

Thagard, Paul Richard. "Why Astrology is a Pseudoscience." *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* 1 (1978), 223–34.

Thomas, Julian. "Archaeology's Humanism and the Materiality of the Body." In *Through the Body: Archaeologies of Corporeality*, edited by Yannis Hamilakis, Mark Plucienik, and Sarah Tarlow, 29–45. New York: Springer, 2002.

Tomasello, Michael. *A Natural History of Human Morality*. Cambridge, MA: Harvard University Press, 2006.

Van Dyke, Ruth M. "Materiality in Practice: An Introduction." In *Practicing Materiality*, edited by Ruth M. Van Dyke, 3–32. Tucson, AZ: University of Arizona Press, 2015.

Van Inwagen, Peter. "When Are Objects Parts?" *Philosophical Perspectives* 1 (1987), 21–47.

Van Oyen, Astrid. "Actor-Network Theory's Take on Archaeological Types: Becoming, Material Agency and Historical Explanation." *Cambridge Archaeological Journal* 25 (2015), 63–78.

Von Wright, Georg H. *Explanation and Understanding*. London: Routledge and Kegan Paul, 1971.

Watts, Christopher M. *Relational Archaeologies: Humans, Animals, Things*. London and New York: Routledge, 2013.

White, Hayden. *Metahistory: The Historical Imagination in 19th-Century Europe*. Baltimore, MD: John Hopkins University Press, 2014 [1973].

Wight, Colin. "Over Socialising the Social World(s)?" *Journal for the Theory of Social Behaviour* 46 (2016), 413–9.

Wittgenstein, Ludwig. *Philosophical Investigations*. Chichester: Wiley-Blackwell, 2009 [1953].