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Collapse, Cataclysm, and Eruption: Alien Archaeologies for the Anthropocene

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Abstract

Our shared planet is becoming increasingly alien in the Anthropocene, and increasingly inundated. These radical changes to our home call for critical considerations of *collapse* – when destruction comes from above and rains downward – and *cataclysm* – as in flood or deluge, when destruction surges up from below – alongside *eruption* – or hyperbolic destruction spewing forth from a container as small as a split atom. The authors propose that a theoretical framework of object orientation offers a way for archaeologists, especially those whose work brings them into the sea, to contribute more meaningfully to contemporary research about our planet's past-present-future. We have two primary aims: 1) to help usher the alienated subdiscipline of maritime archaeology into the broader discourse of the humanities; and 2) to issue a call to action for fellow maritime archaeologists to respond to ecocide more urgently, more cross-disciplinarily, and more responsibly with new interventions into old research questions. After defending the unique relevance of object orientation to the humanities and social sciences – archaeology specifically and maritime or nautical archaeology most of all – it will pose some relevant questions on how to use our research expertise to move forward, while establishing effective methodologies for thinking and communicating the nonhuman to students and the general public. Ultimately, this paper advocates for mobilizing a radical shift in how humans think and care for all the objects sharing our lives, and our destinies, which are increasingly impacted from above, below, and within.

Keywords

Apocalypse, Anthropocene, archaeological theory, maritime studies, nautical archaeology, new materialism, object-oriented ontology

Introduction: Alienations

The need for a drastic revision of human activity has become undeniable if societal collapse is to be avoided and the health of our living planet is to be restored to a state comparable to that prior to the Industrial Revolution. This realization has led scholars across the arts, humanities, and social sciences to develop new approaches to understanding human impact, the roles of nonhuman objects, and how best to interpret their interactions. The more the present crisis is studied and Earth's future is considered, the more apparent it becomes that the past is thoroughly imbricated in the times called present and future. This temporal awareness is a precipice over which archaeological discourse may pass to make potentially valuable contributions to contemporary theory and policy praxis (Nativ and Lucas, 2020). Considering overlapping questions of eschatology, causality, and teleology, the fields of archaeology and philosophy, in particular, share several research domains relevant to understanding and

responding to contemporary planetary crises, and as such, our (inter)disciplinary efforts should be at the forefront of conversations about Earth's rapidly shifting reality. Archaeology has access to the most substantial dataset of humankind, which can be brought powerfully to bear on the new realities of the Anthropocene. As our shared planet becomes increasingly alien, and inundated, critical considerations of *collapse* – when destruction comes from above and rains downward – and *cataclysm* – as in flood or deluge, when destruction surges up from below – alongside *eruption* – or hyperbolic destruction spewing forth from a container as small as a split atom – are essential for understanding the perils of the Anthropocene and teasing out the most appropriate responses to them.

In no small part, this paper serves as a prompt for maritime archaeology, meant to catalyze a discourse outside the comfort of a Holocene Earth and toward an uncertain future. It proposes that a theoretical framework of object orientation offers a way for archaeologists, particularly those working in the maritime milieu, to contribute more significantly and meaningfully to contemporary research about our planet's past-present-future through closer examinations of nonhuman object realities. In a 'flat ontology', object realities are not privileged over one another, but are all agents capable of having real effects in the world. The flat ontology runs in opposition to the 'vertical ontology', which lends itself to ontological hierarchies, and which has prevailed in Western thought for centuries (Table 1; Bryant 2014, pp. 237-240, table 8.1). Most philosophy in the European tradition following Kant (1998 [1781]) has been confined to thinking about objects by way of correlationism, or subject-object relations (Meillassoux 2010, pp. 5-6). Philosophical premises since Kant have rested upon the belief that, because solely humans are capable of thought, only the human subject can be known to exist, and even human subjects are only capable of knowing objects as correlates of Thought and Being. Or in an even more extreme form of idealism, the human mind creates the existence of all external objects, whether global warming, COVID-19, or prehistoric shell middens. By contrast, flat ontologies argue—as is becoming painfully clear in the Anthropocene—that discrete objects are just as real as the subjects thinking them, and that humans can no longer pretend that reality is subjective or that privileged members of our species are the only 'subjects' possessing agency. With this geological epoch having been newly redefined by the presence of humans and our waste, and because archaeologists are effectively scientists of trash, archaeological investigations into refuse have never been more pressing (cf. Pétursdóttir 2017). And as maritime archaeologists, the authors approach this epoch from a perspective of particular urgency because most of our garbage ends up in Earth's waterways. Therefore, maritime and nautical archaeologists are especially implicated in the urgent call for a reassessment of what our research can offer to 'stem the tide of ruination' (Gan et al., 2017, G1). Maritime archaeologists are well suited to address nonhuman and posthuman futures as we often deal in discarded worlds that are particularly 'alien' – being both ancient and underwater, fundamentally foreign – and so it seems that we should have some important, relevant things to say about the submersion of our contemporary world into warming and acidifying seas (Helmreich 2009). As a result, maritime archaeology can be a gateway to archaeology in Anthropocene imaginaries.

This paper has two primary aims: 1) to help usher the rather alienated subdiscipline of maritime archaeology into the greater sphere of the humanities because our research should be more relevant now than ever; and 2) as a call to action for fellow maritime archaeologists to think more urgently, and more cross-disciplinarily, about the present triad of crises, and to respond appropriately with new interventions into the old research questions. These aims are already rather ambitious, and as such, this paper merely advances an explanation of object-

oriented approaches for application to maritime archaeology, which others may then adapt and apply to their own field and museum practices (see papers, this volume). As will be explained in the following section, maritime archaeology has long favored praxis over theory, which has resulted in a lack of critical debate. And yet elsewhere in the social sciences and humanities, debates about object agency, and by extension the agency of archaeological objects, have been ongoing for years. It is past time to settle these debates and bring the implications of object agency into the material urgency of the Anthropocene. After defending the unique relevance of object-orientation to the humanities and social sciences – archaeology specifically and maritime or nautical archaeology most of all – this paper poses some relevant questions to guide new ways of using our maritime research expertise to move forward responsibly, while establishing effective methodologies for thinking and communicating the nonhuman to students and the general public. Ultimately, this paper advocates for mobilizing a radical, transdisciplinary shift in how humans think and care for all the objects sharing our (past) lives and our destinies, which are increasingly inundated from above, below, and within.

Table 1. Some examples, necessarily simplified, contrasting vertical and flat ontologies. Adapted from Bryant 2014, 238, table 8.1.

Vertical ontology	**Flat ontology**
Humanism: the human is placed at the center of scholarly enquiry, with all other objects held at the periphery	Posthumanism: humans are understood as objects among objects, biomes among biomes, and are displaced from the sole focus of enquiry
Scala naturae: supreme deity rules over creation, which is organized in descending order from humans who look most like the deity, to entities that least resemble the deity	Ecology: in a given system, entities, whether animal, plant, fungus, or mineral, are co-dependent and the removal or introduction of a substance often disrupts the entire system
Orthogenesis: evolution leads from most simple to most complex; evolution defined by progress	Symbiogenesis: organisms and environment are co-producing, in response to random mutation, cooperation and competition
Idealism: thinking subject is at the core of existence (*cogito ergo sum*) and thought is rendered more pure than the physical object of thought	Realism: thinking subject and thought object are mutually engaged and both/either have the capacity to affect and be affected by that engagement

Past: Appropriations

Maritime and nautical archaeology has long been prone to a lack of critical theory (cf. Flatman 2003; Harpster 2013; Rich 2021; see Appendix to this chapter). It is shocking that a subdiscipline in the humanities and social sciences that deals so directly with the sea has not been involved in the transdisciplinary conversations about Anthropocene oceans. Rather, these conversations, helping to compose the ‘maritime turn’, are being headed by literary theorists

such as Steve Mentz (2009, 2010, 2014, 2015; see Mentz, this volume) and Stacy Alaimo (2013, 2016); geographers, such as Kimberley Peters and Philip Steinberg (2015); anthropologists, such as Stefan Helmreich (2009, 2016) and Patrick Nunn (2020), and surfers, such as Karin Amimoto Ingersoll (2016). In part, this tendency toward archaeological alienation might have arisen from the frequent segregation of water- from land-based archaeology, with scholars of the former presenting research at specifically maritime and nautical sessions of national and international archaeology conferences, or even entirely specialist conferences (e.g., TROPIS International Symposium on Ship Construction in Antiquity, International Congress for Underwater Archaeology, and the International Symposium on Boat and Ship Archaeology). Likewise, nautical archaeologists often publish primarily if not exclusively in journals such as *The International Journal of Nautical Archaeology* and *The Journal of Maritime Archaeology*. Most of this research is technology-focused, either ancient nautical technologies for establishing trade and shipboard activity, or contemporary technologies enabling more efficient research in the underwater environment. Notable exceptions to prioritizing praxis over theory include papers utilizing Bruno Latour's Actor-Network Theory (Dolwick 2008, 2009), the phenomenology of Maurice Merleau-Ponty (Papadopoulou 2016), queer theory (Ransley 2005), and Donna Haraway's cyborg theory (Tuddenham 2012). Other recent publications, such *North Sea Archaeologies* (Van de Noort 2011) and *A Maritime Archaeology of Ships* (Adams 2013), have employed the works of various sociological thinkers to situate maritime research into grander historical and economic schemata.

Overall however, the engagement of maritime and nautical archaeologists with contemporary theory has remained comparatively, abysmally, low. To provide a couple metrics, for the last six years (2016-2021) at the Theoretical Archaeology Group (TAG), which is North America's leading conference on cutting-edge theoretical approaches to the study of material culture and past peoples, there has been a range of 0–4 representatives of our subdiscipline presenting maritime research, out of 40–147 presenting terrestrial archaeology. In 2016 when TAG Europe was held at the University of Southampton (UK), which is home to one of the world's top research programs in Maritime Archaeology, there were only two papers on nautical archaeology out of a total 229. This series of observations is indicative of a larger trend in the field, and one that could and should be reversed if maritime and nautical archaeologists ever hope to have a large impact within the field comparable to our land-based colleagues, and if we ever hope to contribute research that is valued beyond the confines of a highly exclusive subdiscipline.

Besides the general lack of theory in nautical archaeology, even when it comes to archaeological theory overall, there has historically been a single trajectory: philosophers write philosophy and archaeologists apply those philosophies to archaeology. For example, Christopher Tilley applied phenomenology to the field in *A Phenomenology of Landscape* (1994), *Metaphor and Material Culture* (1999), and *The Materiality of Stone* (2004). However, phenomenological theory remained unaffected by his and others' numerous archaeological applications thereof. This trajectory began to change with the numerous examples of archaeological applications of Deleuze and Guattari's rhizomatic assemblage theory explained in *A Thousand Plateaus* (1987), and which was later expanded upon by Manuel Delanda's *Assemblage Theory* (2016; see Cohen, this volume), along with Jane Bennett's *Vibrant Matter* (2010). This 'speculative turn' began to offer a deviation from the usual archaeological appropriations of philosophy, in no small part because the principal theorists are still-living (and often rather young) contemporary philosophers. For example, recent influential books *In Defense*

of Things (Olsen, 2010) and *Archaeology: The Discipline of Things* (Olsen et al. 2012) developed symmetrical archaeology and provide useful applications of Actor-Network Theory (ANT) and Object-Oriented Ontology (OOO), among others, to archaeological contexts, but in the case of OOO, we now see the principal philosophers engaging directly with archaeologists, co-authoring books and papers (Witmore and Harman forthcoming) and even working together on excavations. Specifically, OOO-affiliated philosopher Levi Bryant, author of *The Democracy of Objects* (2011) and *Onto-Cartography* (2014), has assumed a critical role in the contemporary archaeology project, Unruly Heritage – An Archaeology of the Anthropocene (The Arctic University of Norway, Tromsø). Bryant's direct participation in archaeological fieldwork and resultant publications (see Bryant 2021; Timothy Morton has a paper in the same volume), along with Harman's participation in the present volume, testify to the potential benefit for mutual disciplinary influences, and for the possibility that archaeology might have something uniquely valuable to offer contemporary philosophy, thereby reversing the entrenched trajectory of one-way appropriation (Pétursdóttir and Olsen, 2018; Harman, 2019; Cipolla et al., 2021).

While there is much to admire in the archaeological theories described above, we suggest here that neither phenomenology nor the 'symmetrical' archaeologies (Witmore *et al*. 2014; Edgeworth 2014; Olsen 2010, 9-10; Webmoor 2007; Witmore 2007; Alberti *et al*. 2011, 909) goes quite far enough to avoid the snare of anthropocentrism and the ricochet of its most disastrous consequences. As we catapult ourselves and fellow earthlings deeper into the Anthropocene, a more radical archaeological vision of human : nonhuman relations is needed, one that better acknowledges the asymmetry of humans within the vastness of earthly existence, and at the same time, that this asymmetry takes seriously the need to dismantle the nature : culture binary (cf. Rich, 2017, 2021). Along with other forms of speculative realism, and the closely related new materialisms, OOO has extraordinary potential for completely rethinking the role of archaeology and its objects, and for opening up possibilities for cross-disciplinary discourse between philosophers and archaeologists. Nautical archaeologists, with our notorious fixation on the minutiae of ship parts, sea changes, trade relations, metaphors, and microcosms, could take much fuller advantage of this philosophy; however, the specificity of water-bound archaeologies has much to offer metaphysics too (Rich, 2021). After all, maritime analogies are already abundant in OOO literature: e.g., Harman uses the Dutch East India Company (Vereenigde Oostindische Compagnie, or VOC; Harman 2016; Harman 2018, 27-30; Harman 2019), and Bogost uses the cargo ship (Bogost 2012, 22-23) to exemplify how complex objects behave with their fellows who compose and consume them simultaneously. Because speculative realism and new materialism alike acknowledge the mystical in the mundane, imagine how much more deep insight into the liminality and uncanniness of ancient ships, shipwrecks, and submerged settlements could offer to the logic of object orientation.

As far as metaphysics is concerned, OOO is a new movement, having begun only a decade ago, and it has taken a pronounced place among other branches of speculative realism and related threads of new materialism. In this short time, it has been a significant influencer among several disciplines in the arts and humanities beyond philosophy in the strict sense. Aptly, OOO and similar philosophical veins move toward a materialistic view of objects and away from the text-based discursive practices that have predominated philosophical discourse in recent decades (Bryant, 2014, pp. 1-8). Key thinkers affiliated with this movement assert that reality is composed of objects, that objects are autonomous, and that objects are paradoxically and simultaneously accessible and withdrawn. Although the term 'object' may be problematic for archaeologists due to its connotations within the field (Hodder, 2012), in a flat ontology, it

generally refers to any entity that can be described in specific terms and that interacts with other objects, whether animate or inanimate, real or imagined (e.g. a hand-axe, Sargon the Great, Pegasus, the Big Bang, an electron). As we will explain further below, absorption of this meaning of 'object' into that of the 'archaeological object' is highly advantageous to interpretations of the past by way of material culture. That said, alternative terms such as 'unit' (Bogost, 2012) and 'machine' (Bryant, 2014) have also been offered to describe how individual entities are both autonomous and interactive.

Principle OOO theorist Graham Harman has drawn from the phenomenologies of Edmund Husserl and Martin Heidegger to formulate a theory of how objects exist in reality as discrete units that are also subject to change through relationships and encounters with other objects (Harman, 2011, 2018). He claims that the effects of these outside influences alter the more vulnerable, phenomenal aspect of the object while leaving its autonomous, withdrawn core unchanged. To provide another nautical analogy, we might consider the paradox of the ship of Theseus (Plutarch, *Theseus* 23.1; see Harman, this volume). An object-oriented approach would claim that the ship, which has been refitted and repaired so many times that none of the original timbers remains, is both the same ship (as a *real* object, withdrawn) and a different one (as a *sensual* object, accessible). Because objects cannot be reduced to their parts, it must be the same ship; yet because the ship is experienced differently by other objects and experiences itself fluctuating, so must it also be a different ship (Rich, 2017, pp. 4, 181-182; 2021, pp. 95-96; Harman, 2018, p. 28). The *real* object can only every be accessed (whether by knowledge or by handsaws) obliquely, through metaphor for example, in a way parallel to how humans use hints and inuendo to talk about something without actually talking about it (see Killian and Rich, this volume).

Affiliated OOO thinkers have expanded significantly on, and at times diversified, these basic tenets. For example, Timothy Morton has written on the impossibility of nature, environment, and world as factual 'things' (Morton, 2007, 2013a,b, 2016, 2017), while identifying the existence of hyperobjects, which are massive time-transgressive objects as varied as global warming and microplastics (Morton, 2013b, 2016, 2017; see Edgeworth, this volume). Bryant's geophilosophy, on the other hand, counters Morton by maintaining that the category of nature is a material one, and that culture is simply an emergent, ecological manifestation of human clusters (Bryant, 2014, pp. 156, 281; 2021). These ideas have extraordinary implications for how archaeologists and others studying 'material culture' define the objects of our study, and the impossibility of situating them within the overwhelming contemporary theories and policies regarding 'natural' or 'cultural' heritage, and its preservation or conservation. In a flat ontology, it becomes counterproductive to *automatically* prioritize certain objects (including certain beings or certain lives) over others, simply because doing so might benefit humankind. Here, the grounds that justify deforestation and mountaintop removal become untenable because flat ontologies propose that the Hobbesian default of what is good is what contributes to human flourishing, often has the effect of coming at the expense of many other objects, whose existences are just as real as ours.

Not surprisingly, OOO's proposed radical decentering of the human from the tangled sphere of existence, and the direct refutation of Cartesian binaries such as subject/object and especially nature/culture, has sent shockwaves throughout the academy. Reverberating especially throughout the arts and humanities, it is becoming increasingly common for scholars to challenge dualistic, anthropocentric modalities of human thought and behavior, and to understand these

Cartesian rifts as foundational to the problem of the Anthropocene: that is, that anthropocentrism requires by definition the relative disregard of all things regarded as nonhuman; therefore, anthropocentrism has led to capitalism, industrialization, colonialism, deforestation, nuclear warfare, irresponsible agriculture, pollution, and the dehumanization of even fellow humans. To put it bluntly, the horrors of the sixth mass extinction event, environmental racism, and patriarchy are all direct results of anthropocentrism, so to prevent the worst blows of the current catastrophe – in the forms of collapse, cataclysm and eruption – we must displace the human from the center of our ideological universe – and the sooner, the better. Archaeology, as the study of anthropic and anthropogenic remains, benefits from a de-anthropocentric approach by enabling itself to more holistically understand the variations and proportions of human : nonhuman impacts, from scales molecular to planetary and, increasingly, extraterrestrial. Because OOO recognizes human beings as just one example within the category of object, its metaphysics is very well suited to archaeology, whichever ecosystem or epoch is under investigation.

Present: Argumentations

Now that we have discussed the relevance of OOO to archaeology, how exactly can object-orientation critically and responsibly contribute to archaeological practice? Specifically, how does flat ontology, a philosophy that de-centralizes humanity, benefit a discipline that by definition elevates human culture into the primary field of focus? And if the human is decentered, how can implementing object orientation remain ethical, by, e.g., not placing racist monuments on a level of equal importance with the people oppressed by them (see Ribeiro and Wollentz, 2020)? To be clear, flat ontology states merely that all things equally exist, not that all things exist equally (Bogost, 2012, p. 11; cf. Bryant, 2021, p. 74). In other words, this philosophy is making an ontological claim rather than a moral or ethical one. Indeed, recent research identifies the common ethical objection to flat ontologies as a strawman argument, and rightly so (Cipolla et al., 2021, p. 6); to the extent that it continually resurfaces despite having been put to rest consistently for a decade, one might wonder if it might be considered something of zombie strawman. To the point, no one is suggesting that a coronavirus has just as much right to existence as a human; however, a flat ontology might imply that the coronavirus has just as much of an agenda as the human it infects. Likewise, no one is suggesting that the monument to Christopher Columbus is just as important as an Indigenous American individual. Rather, an object-oriented approach would regard the statue as an active agent in spacetime, rather than a mere symbol of a bygone past: that is, that the statue of a man long dead remains a powerful enactor and enabler of continued oppression against living people (see Watson, this volume). This is exactly why monuments to Christopher Columbus and slave trader Edward Colston have been pulled down by crowds of people in recent days (at the time of writing) and, again implicating maritime archaeology, thrown into bodies of water on either side of the Atlantic (Figure 1). Put simply, in flat and object-oriented ontologies, the nonhuman object is anything but passive, waiting to be layered with meaning by a human subject (see Han, this volume). Instead, nonhuman objects also generate their own meanings, and, ironically in the broader field of anthropology, this realization of powerful, not just empowered, objects is hardly a new one (e.g., Gell, 1998).

Figure 1. Statues of Christopher Columbus (left, Richmond, Virginia, USA) and Edward Colston (right, Bristol, UK) were pulled down by civil rights activists in the summer of 2020. Activists threw the statues into nearby bodies of water (Columbus into Byrd Park Lake, and Colston into Bristol Harbour), only for them to be fished back out of the water by counter-protestors. (Image sources: Columbus photograph from Wikimedia Commons by Smash The Iron Cage, 2015; Colston photograph from Wikimedia Commons by Simon Cobb, 2019).

In archaeology, a flat ontology has the ability to add nuance to not only the oversimplified binary of human/nonhuman (where do I end and gut microbes begin?), but also nature/culture, Western/non-Western, colonized/colonizer, past/present (Cipolla et al., 2021; Rich, 2021). As intimated in the section above, if the nature/culture binary could be dissolved, then the other Otherings of '*x* demographic is closer to nature' would follow suit because colonialism, racism and sexism are dependent upon the idea that the Other is closer to a feminized animal nature and further from a masculine civilized culture (cf. Bryant 2021).

But traditionalists should fear not. Even though objects are being studied as more than a mere means to an end, because humans are one object among many, human decentralization can still increase an understanding of human behavior and past cultures. Recently, Kyle Harper reframed the social structure and economy of the Roman Empire using environmental data, arguing that the Romans "had no idea of the contingent and parlous environmental foundations of what they had built" (Harper 2017, p. 15). In sum, not every human behavior is guided by intent, but is rather the result of interacting entities both human and non. In acknowledging the frequent unintentionality of interactions and impacts, we can think of objects human and nonhuman, animate and inanimate, as possessing a kind *potency*, or potential agency (Rich 2017, pp. 5-6). The idea of potency was developed in response to historical, geochemical, and iconographic analyses of East Mediterranean cedar forests, the shipbuilding industry, and the ancient deities who presided over seas and seafaring. When synthesized, these analyses led to the conclusion that the physical and metaphysical properties of cedar wood generally, and the diverse qualities of specific forests, had discernible impacts on shipbuilding, seafaring, timber trade, and deforestation in the ancient East Mediterranean. Whether intentional or not, external, extrahuman, agents affect our decision-making regularly, and these effects require acknowledgement in order to interpret human behavior broadly, as Harper has done for the Roman period and Rich for shipbuilding in the East Mediterranean. By contrast, trying to understand reality within anthropocentrism is like trying to understand a football game by only focusing on the bodies of the players. This assessment would necessarily be limited because it does not acknowledge that the movements of the players are entirely dependent on the ground upon which they play, the air they breathe, the chemical reactions inside their bodies, the presence of the audience, and of course, the movements of the ball. While the ball may not move independently, it is only by analyzing its interactions with the players, the field, the atmosphere, and the rules of the sport that one can come to an understanding and appreciation of the game. Just as each of these objects must exhibit some kind of potency in order for the game to be played, the complexities of human behavior and culture can best be understood as the myriad and nested interactions of nonhuman and human objects.

Alongside considering the potency of objects, humans included, we might also bear in mind the *pluripotency* of objects: that is, that all objects 'possess a range of possible becomings allowing for the genesis of distinct forms and functions' (Bryant 2014, p. 26). Maritime

archaeology operates in and around bodies of water, which have been put to use by humans in a variety ways throughout time. For this reason alone, it is impossible to interpret human behavior within maritime cultures without understanding these peoples' interactions with the water. Water possesses specific physical qualities that have allowed for the most efficient methods of transportation up until the automobiles and air travel of the very recent past. Archaeologizing Morton's time-transgressive hyperobject, Johan Normark terms water a *hyperfact* due to its special, transcendent characteristics (Normark 2014; this volume). An object-oriented archaeology of the sea would challenge prevailing anthropocentric theoretical frameworks, such as maritime cultural landscape theory, by acknowledging the sea is the central agent, providing the numerous mechanisms (buoyancy, currents, and winds) that allowed for the development of maritime mobility and long-distance trade to begin with (Campbell, forthcoming). Interactions between humans and the sea are dependent on the qualities of each, and because the latter is particularly uncanny and strange, human behaviors in maritime environments are different from those that are landlocked. The qualities that define mobility on land, such as gravity, elevation, slope, friction, and textures of the grounds being traversed, are not found at sea. Instead, seafarers successfully interact with the entity of the sea by ensuring one factor: buoyancy. Because of the mass, density, and surface tension of water, the force of gravity is less significant for seafarers, which in turn allows humans to undertake activities not possible on land (Greene 1986, p. 40; Strang 2015). Comprehending the reality of water was a revelation for human transport, tens of thousands of years ago, when our ancestors' watercraft first set sail, as much as it was a hundred years ago, when metal ships weighing thousands of tons were built to move great distances, buoyantly, over water. Without coming to terms with the distinctly alien realities of seawater and oceanic behavior, it is unlikely that large-scale human connectivity and globalization would have developed.

Ever more apparent as the Anthropocene progresses, complex interactions between humans, the sea, technology, and ecology are better understood through realist rather than idealist philosophies. For example, the development of a highly specialized and insular culture in 1863, centered on the sponge-diving industry, and its collapse in 1986 is explained not through behavior confined to the human alone, but through ecological cycles lasting far longer than human lifetimes and which work alongside the agency of the sea (Campbell, forthcoming). As time and space somehow expand and contract in this new epoch of the human, it is increasingly clear within archaeology that the role of artifacts is receding while the role of ecofacts is advancing, due to the latter's ability to provide large-scale narratives of human cultures over great swaths of time. While ecofacts and other nonhuman agents are increasingly acknowledged for their potency and diverse methods of influencing human behavior—in particular by scholars employing ANT, new materialism, or symmetrical archaeology—OOO continues to be more controversial, particularly but not exclusively among those subscribing to the subject/object, mind/body, and nature/culture divides of European philosophy since the Renaissance.

This controversy often centers on the claim that the Kantian subject/object divide cannot be overcome, especially in regards to intent. This argument is typified by Andreas Malm, who writes, "The sun does not act when it rises in the morning (although it certainly makes a difference to a state of affairs), for on the lay view, an element is needed which is absent in the daybreak: an agent seeking to accomplish some goal. The parent who wakes up his child when the sun rises has agency, while the morning light does not" (Malm 2018, p. 84). Malm rejects object orientation on the basis that objects cannot have agency because they do not have an explicit intent or goal (Malm 2018, pp. 84-85). While Malm's method for interrogation of such

objects to discern whether they have aims is unclear, it must be clarified that most OOO philosophers—along with proponents of ANT, new materialism, and symmetrical archaeology who likewise reject post-Kantian correlationism—do not argue that sentience or even intention is what constitutes the capacity for agency (which is an important distinction between agency in most flat ontologies and in some Indigenous ontologies; compare Bryant 2021 and Watts 2013). Instead, most argue for a definition of agency that is distributed, or that encompasses possibility and accountability, wherein human, nonhuman, animate, and inanimate objects, and the relations between them all, have discernible, tangible effects on existence writ large, and on a smaller scale, human culture and behavior (e.g., Bennett 2010). As explained in Karen Barad's theory of agential realism, possibility and accountability do not rest exclusively on intent, even in solely human affairs like negligent homicide, where accountability overrides intent (Barad 2007; cf. summary in Dolphijn and van der Tuin 2012, pp. 54-57). Likewise, a hurricane may not have the intention of causing a captain to change course, but it does anyway, and that is agency – or at the very least, potency (Rich 2017, p. 6). The sun may not have the intention of causing blindness, sunburn, or skin cancer, or any other outcome including photosynthesis, yet in the human material record, there exists kohl, sunscreen, parasols, and tinted windows to counteract solar radiation because the sun has agency. There may have been no intent behind the Big Bang, yet it created the matter that forms all bodies, and its gravity waves are visibly evident as static on our televisions. Agency is equivalent to affective action, not to intent, as Malm suggests. By contrast, OOO argues that interactions between objects—human and nonhuman and regardless of intent – can have real impacts, some but not all of which are discernible to sentient beings, including but not exclusively human beings.

Another counterargument is that OOO is simply too masculine to account for a queer planet of multiplicities, and that this is apparent through its tendency to take as its sample objects machines and corporations, masculine things such as toasters or ships or entire companies of ships (e.g., Alaimo 2016, pp. 179-184). While it is true that machines do compose some of the examples used to explain the theory, it cannot be stated with any accuracy that machines are fundamentally more masculine than any other form of art or technology. That a division even exists between art and technology is grounded in European Renaissance thought when a functional and hierarchical separation between forms of *technē* (Greek) and *ars* (Latin) – both of which mean simply 'craft'— began to emerge (e.g., Flusser 1999). In addition to this subtle Eurocentrism, there is also an underlying assumption that machines are for men while willowing organic forms are for women, and that by relying on machines to tell a story, OOO thinkers are excluding women and queer folk from the tale. However, this reasoning seems to rest uncomfortably on stereotypes of what women and men and queer folk are drawn to and the analogies that we each are capable of (and enjoy) understanding (cf. Ransley 2005). While it is true that most of OOO's principal thinkers at the moment are male, Morton identifies as nonbinary, and each regardless of sex or gender writes for audiences of all parts and proclivities, and in no uncertain terms decries patriarchy while implicating it in the emergence of the Anthropocene (e.g., Morton 2018, p. 27; Bryant 2014, pp. 258-260).

Anthropological archaeologist Severin Fowles has recently claimed that the turn to things is at least partially a product of postcoloniality impeding the study of people of other cultures (Fowles 2016). The turn to things allows anthropologists to keeping giving voice to subaltern subjects—now nonhuman objects—at a time when postcolonial discourse justifiably pushed to end such colonialist practices. His argument that nonhuman objects have become surrogates for non-Western subjects is powerful and warrants deep introspection. However, it does not fully

account for Harman's theory of OOO, which draws from philosophies of Husserl and Heidegger that predate postcolonialism. His argument also brushes up against another criticism of OOO, that in all its panpsychist sympathies (e.g., Harman 2011, pp. 118-121; Harman 2009), it is merely an appropriation of animism, present in many Indigenous and non-Western ideologies that also recognize autonomy if not personhood in animate and inanimate objects alike (Marín-Aguilera 2021; Todd 2016). While it is true that OOO reaches a similar conclusion regarding the inherent power of all things, and the mysteries that each contains, it has reached its conclusion independently, and perhaps surprisingly, by means of Western philosophy: that is, beginning with a rejection of the Kantian Revolution of human privilege (Harman 2011, 120; Morton 2017, pp. 11-13). That many ancient and non-Western cultures theorized first on the secret inner lives of nonhuman things is not up for negotiation; yet neither should it be negotiable that different methods of reasoning can be used by thinkers hailing from different cultural groups to reach the same or similar conclusions – archaeologists in particular ought to be wary of falling back on diffusionist models when convergence is a better explanation for cultural similarities. If anything, the consensus only adds credence to the entire theoretical set. The primacy of Indigenous, ancient, and non-Western thought on this matter is also acknowledged abundantly, perhaps most often by Morton who a) discusses contemporary Aboriginal Australian art and its capacity for embodying the concept of object allure (2013a, b, 2016, 2017), b) ascribes the first identification of hyperobjects to 10th century Islamic scholar Muhammad ibn Zakariya ar-Razi (2013b, p. 66); and c) whose most recent solo-authored book, *Humankind* (2017), is dedicated to the Water Protectors, Indigenous Americans who have intervened at great cost in the illegal construction of various pipelines that threaten water potability, sovereign territory, and treaty rights in favor of the fossil-fuel economy. Harman also roots his theory of vicarious causation in the Islamic occasionalism espoused by al-Ashʿari and al-Ghazali, in the 10th and 12th centuries respectively (Harman 2018, pp.163-164). That said, it is true that greater acknowledgement should be given to Indigenous authors who write on parallel issues of Anthropocene studies and nonhuman ontologies (e.g., Watts 2013; Kimmerer 2013; Todd 2015; Ingersoll 2016; Whyte 2017), while avoiding the fictional, universalizing trope of 'Indigenous thought' (cf. Abadía and Porr 2021). There is no question of who arrived first at this place where the vibrancy of things is self-evident, but it does seem clear that OOO thinkers would like to meet likeminded there since they happened to arrive too, if unwittingly and by way of a different, phenomenological, theological or existential, path. It might also be noted that neither were OOO affiliates the first Western thinkers in the wake of the Kantian Revolution to encounter this place since, in the seventeenth century, Baruch Spinoza also arrived nearby this multicultural, multitemporal, philosophical trysting tree by way of radical Jewish theology.

Within the Western tradition, an important philosophical objection to OOO's emphasis on collusion with the nonhuman is the sheer impossibility of transcendence into the consciousness of another being. With this view of the limitations of consciousness, we humans cannot ever understand the realities of even fellow *Homo sapiens*, let alone other animals, and least of all those least-ensouled plants, and forget altogether rocks, plastic, glass, and others of the so-called inanimate variety. In his highly influential 1974 paper, "What Is It Like to Be a Bat?" philosopher Thomas Nagel acknowledges that, although consciousness cannot easily be defined and that it almost certainly exists in forms that we humans and our machines may never detect, moving beyond our subjective phenomenal experience is simply impossible. We are bound to our individual experience and cannot transcend it. Bogost has offered a sympathetic but substantial rebuttal to Nagel's central argument while retaining some of his key concepts on subjectivity,

epistemology, and metaphysics. His book *Alien Phenomenology* (2012; see also Bryant 2014, pp. 62-63, and Killian and Rich, this volume) accepts the limitations of both subjective experience and 'objective' science, but claims that the incomprehensibility of the 'alien' other is no excuse for not trying to get closer to mutual (?) comprehensibility. He offers three methods for easing the limitations imposed upon us by our epistemic systems (invented and innate) while decentering the human from our 'worlding' (to borrow a Heideggerianism): ontography, metaphorism, and carpentry, each of which embeds humans a little deeper into the realities of our nonhuman fellows (on ontography, see: Harman 2011, pp. 124-135; Rich 2017; for all three, see Rich 2021). He concludes that this practice is not in vain – rather it is the opposite of vanity. As we 'go outside and dig in the dirt', like good archaeologists, we expose our most vulnerable selves to the wonder of Being – and indeed, Becoming (Bogost 2012, p. 133; cf. Rich 2017 and 2021). This in turn can lead us into closer, tighter, more respectfully intertwined relationships with the 'everyday alien' among us.

The final primary criticism comes from OOO's peers in new materialism and in other branches of speculative realism whose readings of this philosophy's basic tenets have issued concerns about objecthood being defined as withdrawn instead of entangled. They claim that withdrawal cannot account for the symbiotic, nested, and layered aspects of earthly existence (e.g., Keller and Rubenstein 2017, p. 2). However, this reading does not account for the Janus-faced, paradoxical nature of objects as possessing real (internal, inaccessible) and sensual (phenomenal, changeable) selves as described especially by Harman (2011, 2018). In addition, Bogost (2012), Bryant (2011, 2014), and Morton (2018) – conjuring computer technology, Lacanian psychoanalysis, and quantum mechanics, respectively – all engage with the entanglement of 'sensual' objects considerably more than with their withdrawn alter-egos, for the simple reason that as inaccessible, unknowable, unsolvable mysteries, they exemplify the limits to human knowledge or any other form of access – so what more can be said about the shadowy alter-egos beyond acknowledging their existence?

In effect, new materialism and speculative realism, including its more contested branch of OOO, are in profound agreement about the vibrant, shimmering, and altogether powerful nature of the nonhuman world (cf. Harman 2016; Harman 2018, pp. 240-243), and these nonhuman autonomies must once and for all be acknowledged in the West, and especially in the academy, if widespread ideological change is to happen. What these metaphysical explorations all agree on is that this understanding of the nonhuman as greater than the human, as resistant and resilient not passive and conquerable, and as warranting just as much 'thought-power' (to adapt a Bennettism) as the human, has profound implications for human behavior at this critical moment in our shared existence.

To be clear, the most important area of overlap in this ideological Venn diagram is the urgency of the Anthropocene. The people-first (and by extension, the me-first) mentality of humanism (and by extension, capitalism) is what has gotten us into this mess to begin with. Therefore, as humanists and social scientists, there is great potential to heed the call to study objects, not as means to an end – as in the all-too-common human-social (re)integration of objects – but in and of themselves, which includes by definition their accidents, relations, and entanglements. An ideological change may lead us toward real political and socioeconomic change, and in the current system of things, that may be the only way forward. As we attempt to free ourselves and others of the fishing line and plastic six-pack rings that pull us deeper into rising sea levels, those of us whose expertise is in artifacts underwater should step up and take

more responsibility for considering critically the simultaneously withdrawn and entangled nature of objects in existence.

Future: Adaptations

While a radical departure is inevitable as we sink deeper into the Anthropocene, we might begin with more humble adaptations of the usual research questions of 'how did this ship wreck', or 'with whom were these people trading when their settlement was consumed by glacial meltwater', to consider how this knowledge can be put to the work of the Anthropocene. In so doing, ethical concerns surrounding the implementation of flat ontologies into archaeology might be mitigated (Ribeiro and Wollentz, 2020). Although by no means exhaustive, we offer a few questions that we believe are worth considering as we embark on new projects, revise older ones, and advise new generations of students (whose lives will be most directly affected by what is done and not done now) on their own research paths. To respond adequately to cataclysm, collapse, and eruption, fervent adaptation is an urgent necessity.

Collapse

If collapse is a failure from above, then questions addressing this form of destruction may be understood as explicitly political. The academy has long been complicit in the darkest avenues of industrialism, neoliberalism, and globalization following centuries of exploitative colonial and neocolonial policies, which have made the Anthropocene into its own system of oppression, disproportionately harming marginalized populations. Although we have too often been complicit, academics have also long been aware of the failures of these policies. Now, a collapse of these systems appears imminent, if not overdue.

- Considering the possibility of the collapse of civilization as we know it, what are the advantages to maritime and nautical archaeologies adopting more critical theory? Moving beyond archaeological applications of philosophical approaches, what are the precedents for mutual lines of influence between philosophy and archaeology? To what extent can such mutualistic relationships be strengthened, and what would be the consequences?
- If maritime archaeology is to increase within the Global South then room has to be made for more non-Western theoretical approaches to archaeological practice; so how can maritime and nautical archaeologies more substantially and significantly include and account for collapsed Indigenous perspectives?
- Considering the number of contemporary refugees who perish in water crossings, how can nautical archaeologists contribute to preventative measures by studying the crises?
- What can be learned from previous overseas colonization missions that might inform current conversations about Mars colonization as an escape from earthbound extinction?
- Given the increasing amount of satellite and rocket debris that re-enters Earth and crashes into oceans, what can maritime archaeologists contribute to the study of its effects on marine habitats?
- If object-oriented ontologies, criticisms of heritage, de-anthropocentric approaches to fields within the humanities and arts, and critical evaluations of the Anthropocene all have urgent real-world implications, how can we as theorists, researchers, and educators

effectively translate complex theories into pedagogical, public-engagement, and public-policy praxis?

Cataclysm

Surging up from below, cataclysm is the particular destruction of a warming planet, whose polar ice caps are melting at accelerated rates and raising sea levels at several millimeters per year and counting. Other results of cataclysm are the megastorms – the severe hurricanes, typhoons, and cyclones battering coastal areas – that are increasing in power and number due to rising surface temperatures of oceans. But cataclysm doesn't stop at just the encroachment of water. In the Anthropocene, these waters are loaded with microplastics, agricultural runoff, raw sewage, petroleum and its derivatives, and radioactive waste. These entanglements of the anthropogenic and the preexisting obfuscate the nature/culture divide, and should cause us to radically reconsider the place of the human in the world. Furthermore, as scientists of trash, and as scientists of refuse in water, maritime archaeologists have a distinct responsibility to rise, so to speak, to the occasion of cataclysm.

- As those who study death by drowning (shipwrecks and submerged coastal settlements) in the midst of global cataclysm, how can maritime and nautical archaeologists significantly contribute to conversations about and actions against global sea-level rise?
- How can maritime archaeology use object-orientation to become action-oriented toward coastal resiliency?
- What can nautical archaeologists offer to mitigation efforts of polluting Industrial-era and contemporary shipwreck sites?
- How does the idea of the 'archaeological object' change when it encompasses the truly liquid, i.e., the nonmaterial and the noncultural?
- Understanding the fundamentally public nature of these problems, if *nature* and *culture* as distinct domains are dissolved, what happens to tangible and intangible forms of heritage?
- How does the Humanities change course to reflect the realization that human 'subjects' are but other objects in a complex and interconnected planet, our fellow participants of whom are no less deserving of scholarly attention?
- To what degree do classic Western dualisms, such as past and present, nature and culture, human and world, subject and object, influence everyday human behaviors? What effect would breaking down the binaries in an academic sphere have on the general public, and by extension, Earth's planetary systems?

Eruption

Bursting forth from containment, catastrophic eruption is not limited to volcanoes. Retaliating against centuries of colonial racism, there are, at the time of writing, millions of marginalized people groups bursting forth in public demonstrations to demand justice and protest police violence. Movements such as the Arab Spring, Black Lives Matter, and Missing and Murdered Indigenous Women and Girls, are grassroots eruptions in response to the violently oppressive social conditions generated within the Anthropocene. Other examples of epochal eruption, from capitalism to Chernobyl, have only exacerbated the conditions of oppression among vulnerable

human and nonhuman populations alike. Humans have not only witnessed but facilitated eruptions of radioactivity from split hydrogen atoms; the permeation of micro-plastic pollution into soft animal bodies and rigid Arctic ice; and a pandemic caused by a microscopic virus in Wuhan bats, killing millions around the world as it spreads by air and boat travel. Again, maritime archaeology has a unique capacity to analyze the potency of anthropogenic forces as objects, which erupt into new and disastrous afterlives.

- With the understanding that ships were the mechanisms of European colonialism, how can maritime archaeology contribute to post- and anti-colonial narratives, instead of reiterating that of the seafaring colonizer as 'Great Man'?
- Given the role of cruise ships in the spread of the current coronavirus pandemic (COVID-19), how can maritime archaeologists use their expertise in ship architecture, modes, modifications, and motivations of sea travel, and alternative uses of ships to conceive of alterations to an existing maritime industry?
- It is often predicted that the next major violent conflicts will be fought over fresh water. The US is already seeing these eruptions of conflict at pipeline construction sites that threaten to interfere with Indigenous peoples' access to fresh water. The Syrian Civil War was also precipitated by water mismanagement. So how can maritime archaeologists use their knowledge of past water crises to contribute to important negotiations between the conflicting interests of infrastructure, investments, and human rights?
- In what ways can maritime archaeologists convert their knowledge of waterways into concrete changes to public policy on nuclear waste disposal, fossil-fuel pollution, sea- and airborne pandemics, microplastics pervasion, wastewater and runoff?

An overarching question that encompasses the whole catastrophic triad raises the issue of pedagogy: how can we establish effective programs for public discourse and teaching that do not fall back on the dystopian languages of hopelessness ('there's no use in trying') or apocalypticism ('divine (or technophiliac) intervention will fix it, so there's no use in worrying')?

It may be noted that none of the research questions offered here poses sustainability as a solution worthy of scholarly consideration. The paradigm of sustainability that has seeped into academic communities and campuses in rich countries around the world is not just insufficient but also counterproductive. Sustainability is guided by a gospel of comfortability, ultimately rooted in capitalism, which is one of the most powerful underlying forces of the Anthropocene (Moore 2015). It pre-supposes an equilibrium that existed, if it existed at all, in a past and increasingly distant Holocene planet. It leads consumers to believe that if they buy organic food and recycle their plastics that the current extinction event will stop. Sustainability fools consumers into a false sense of security by thinking that they are 'saving the world' by buying not less but differently and discarding not less but differently, all the while 'sustaining' a comfortable, neoliberal lifestyle. Ultimately, sustainability externalizes individual humans from their commodity-world, which is perceived as remote and inert, and this is the selfsame ideology of the Anthropocene (Alaimo 2016, pp. 171-177).

Just as dangerously, in Morton's terms of dark ecology, sustainability makes its adherents susceptible to 'Beautiful Soul Syndrome' (to adapt a Hegelianism), the sufferer of which clings to a false sense of superiority at the same time as one of false hope (Morton 2016, pp. 130-131; Rich 2017, pp. 219-220). In an era of necessary hierarchical flattening done honestly if hastily, neither a false sense of superiority nor one of security will help us achieve the radical revision needed to confront the Anthropocene head-on. Instead, we must realize that our heads, our choices, our undifferentiated mind-bodies, are all a part of Earth without being apart from it. We must embrace the fact that we are always-already immersed in objects, and only then can we orient ourselves among the entanglements.

Conclusions: Accountability

Given rapidly rising sea levels and the promise to make ruins of many more island and coastal communities, maritime and nautical archaeologists have the potential to be at the forefront of conversations surrounding the realities of the Anthropocene. Wrecked oil tankers globally, along with the desperate flight of climate refugees resulting in more wrecked boats and ships, heightens the urgency of maritime and nautical archaeologists' involvement at the levels of interdisciplinary academic discourse and public policy (Campbell and Pape, forthcoming; Rich et al., this volume). While mutual and effective interdisciplinarity is increasing among philosophers and archaeologists, more maritime archaeologists might also step out to offer unique and important insights into climate adaptability, landscape submersion, refugee crises, waterborne pollution, and escapist colonization. Archaeology, as the field containing the sum of data of human existence on Earth, should be a bigger part of the discourse on the reality of the Anthropocene and, in all likelihood, in the driver's seat of a radical re-imagination of human life on Earth as the one field that regularly engages with the alienness of different temporalities and ontologies.

Finally, we would like briefly to acknowledge the irony at work in separating the three sections of the body of this paper into past, present, and future. While grasping the arbitrariness if not fallaciousness of the tripartite division of time (cf. Lucas 1997, 2005), we suggest that there may be some value in conforming to these standards: namely, that there is an accountability in thinking in terms of what has happened, what is happening, and what could happen. Global warming, Morton's favorite example of a hyperobject (Morton 2013b), transcends these times, which is why we must stop referring to it as though it were a prognostication. Global warming, like other causes of ecocide, is neither a future tense nor a past tense. It is a present tense that we cannot defer to times other than our own. Acknowledging this is requisite to taking responsibility for it, which in turn will help us change our tenses so there exists a future that as many of us earthlings as possible might recognize as earthly.

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