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Does environmental archaeology need an ethical promise?

Felix Riede\textsuperscript{a}, Per Andersen\textsuperscript{b} and Neil Price\textsuperscript{c}

\textsuperscript{a}Department of Archaeology, Aarhus University Moesgård, Højbjerg, Denmark; \textsuperscript{b}Department of Law, Aarhus University, Aarhus, Denmark; \textsuperscript{c}Department of Archaeology and Ancient History, Uppsala University, Uppsala, Sweden

**ABSTRACT**

Environmental catastrophes represent profound challenges faced by societies today. Numerous scholars in the climate sciences and the humanities have argued for a greater ethical engagement with these pressing issues. At the same time, several disciplines concerned with hazards are moving towards formalized ethical codes or promises that not only guide the dissemination of data but oblige scientists to relate to fundamentally political issues. This article couples a survey of the recent environmental ethics literature with two case studies of how past natural hazards have affected vulnerable societies in Europe’s prehistory. We ask whether cases of past calamities and their societal effects should play a greater role in public debates and whether archaeologists working with past environmental hazards should be more outspoken in their ethical considerations. We offer no firm answers, but suggest that archaeologists engage with debates in human–environment relations at this interface between politics, public affairs and science.

We are living in a climate of fear about our future climate. The language of the public discourse around global warming routinely uses a repertoire which includes words such as ‘catastrophe’, ‘terror’, ‘danger’, ‘extinction’ and ‘collapse’. To help make sense of this phenomenon the story of the complex relationships between climates and cultures in different times and in different places is in urgent need of telling. If we can understand from the past something of this complex interweaving of our ideas of climate with their physical and cultural settings we may be better placed to prepare for different configurations of this relationship in the future. Mike Hulme (2008, 5)

**Introduction**

With these words, Professor of Climate and Culture at King’s College London Mike Hulme chose to open his clarion call for a culturally aware and historically informed appreciation of our current climate change challenges (see also Hulme 2010, 2011b, 2015). He has further argued – in the inaugural issue of *Nature Climate Change* – that the humanities have a major role to play in meeting these challenges in the years to come (Hulme 2011a). Although no claim to comprehensiveness was made, archaeology was conspicuously absent in the list of pertinent subjects offered by Hulme. Archaeology or its long-term perspective go similarly unmentioned in major recent reviews of environmental ethics (e.g. Palmer, McShane, and Sandler 2014; Nolt 2015). Despite its strong
tradition of collaboration with the environmental sciences (e.g. Butzer 1982; Dincauze 2000; Kristiansen 2002), does archaeology really have nothing to contribute here?

The present article discusses how archaeology can relate to contemporary environmental ethical debates, and what their implications may be for archaeological practice. It does so specifically in the context of emerging discourses in neighbouring disciplines – climate change science, geology, disaster risk reduction, the environmental humanities – about personal and professional codes of behaviour that would to a certain degree prescribe conduct where notions of stewardship, preservation and professionalism increasingly spill over into political domains. This, we believe, is particularly pertinent when past human–environment relations are also viewed within the context of our inherently future-oriented heritage (Holtorf and Högb erg 2015). We briefly discuss two case studies of how environmental events – specifically volcanic eruptions – have strongly affected European communities in the past. Each is associated with considerable academic controversy, but also with results that are suggestive and ‘usable’ (Stump 2013) if seen in the light of current affairs and future risks. The question is therefore whether those working with issues of environmental impacts in the past should – or rather must – engage with the implications that their research has for potential futures.

We begin by outlining the theoretical and intellectual background for a possible resolution, in our perception of an interesting, albeit not entirely unproblematic, convergence of different disciplines within both the humanities and the natural sciences. We then introduce our case studies and discuss their implications for disaster risk management. While we strongly promote an ethical engagement by archaeologists with the potential consequences of their research, in conclusion we also caution against the conscious downplaying of uncertainty in the pursuit of environmental activism. Far preferable, we feel, is the careful consideration of how research results are communicated, and to which targeted channels they are primarily directed.

Environmental ethics and disciplinary promises

Ethical thinking is generally divided into three more or less distinct approaches: virtue ethics focusing on morality and character; deontology with its focus on rules; and the utilitarian consequentialism concerned primarily with consequences of action. All ethics share a concern with the ‘right’ way of acting. Climate change and climate catastrophe are ubiquitous issues in the present, and there are no obviously right solutions. Instead, coping with the environmental and societal transformations brought about by climate change is a so-called ‘wicked problem’ (Hulme 2009) that, by definition, has no single correct means of resolution, but which has to be met by inherently value-laden assessments. For Hulme (2014), the solution is the reinvigoration of virtue ethics that lead us to take personal and, by extension, professional standpoints on the matter. Virtue ethics has a venerable history of thought going back to Aristotle, and has previously seen applications in professions such as medicine and legal practice (Oakley and Cocking 2001). Recently, virtue ethics has also experienced a revival within the broader field of environmental ethics (Cafaro 2010; Palmer, McShane, and Sandler 2014).

Within the non-archaeological humanities, a concern for environmental issues is also growing rapidly. Eco-historicism or environmental history (Wood 2008) as well as eco-criticism or the environmental study of literature (Buell 2011; Marland 2013; Hiltner 2015) together make up the field of environmental humanities (Bergthaller et al. 2014). Writings in this genre – going back to founding contributions such as Rachel Carson’s Silent Spring (1962) and Aldo Leopold’s A Sand County Almanac (1949) – have strong ethical dimensions verging on activism (e.g. Plumwood 2002;
Skrimshire 2010). Most recently, Kate Rigby (2009) has presented a strong argument for environmental ethical engagement from the humanities specifically in relation to disasters (Rigby 2015). Her ethical stance can be located somewhere between virtue ethics and the moral imperatives of deontology.

Within the field of disaster risk reduction (DRR), renewed attention to ethical principles has emerged from a different direction. Working with human subjects in disaster and post-disaster settings, DRR research usually has to pass ethical approval before funding is given and investigations begun. Most commonly, the ethical integrity of projects is judged against benchmark documents such as the Belmont Report (see http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html), which represents a mixture of deontological and consequentialist thinking. More specifically, these baseline ethics have recently been expanded by a more pluralist approach emphasizing fidelity, reparation, gratitude, justice, beneficence, self-improvement and non-maleficence as cornerstones of ethical behaviour (Browne and Peek 2014; see also Kelman 2015).

A final perspective of relevance here are the recent proposals from within geology to put into place a specifically geo-ethical codex akin to the Hippocratic Oath (Ellis and Haff 2009; Lucchesi and Giardino 2012). Much like Hulme’s writing referred to above, this geo-ethical movement (see Henriksen 2005; Wyss and Peppoloni 2015) can be seen in light of current concerns for climate change and climate catastrophe, but also in relation to recent catastrophic environmental events such as the 2009 L’Aquila earthquake in central Italy and its dire consequences for lives and livelihoods. While now freed from these allegations, the scientists advising on quake prediction and likely consequences were originally charged with manslaughter (Cocco et al. 2015). The process from the original charge to the eventual release of the scientists in question has been widely criticized by the scientific community (e.g. Aarden 2012; Fast 2012; Boschi 2013; Cocco et al. 2015), but has also led to some soul-searching in relation to the ethical commitment, responsibilities and legal status of advising scientists (Alemanno and Lauta 2014; Donovan and Oppenheimer 2014b). The current version of the proposed ‘Geoethical Promise’ (Matteucci et al. 2014, 191) reads as follows:

- I promise I will practice geosciences being fully aware of the involved social implications, and I will do my best for the protection of geosphere for the benefit of mankind [sic].
- I know my responsibilities towards society, future generations and the Earth for a sustainable development.
- In my job I will put the interest of society at large in the first place.
- I will never misuse my geological knowledge, not even under constraint.
- I will always be ready to provide my professional assistance when needed; I will always make my expertise available to decision makers.
- I will continue to improve my geological knowledge lifelong and I will always maintain my intellectual honesty at work, being aware of the limits of my capabilities and possibilities.
- I will act to foster progress in geosciences, the dissemination of geological knowledge and the spreading of the geoethical approach to the management of land and geological resources.
- I will honor my promise that in my work as a geoscientist or certified geologist will be fully respectful of Earth processes.

While the ethical foundations for such undertakings go back to classical philosophy, the promise as presented is quite strongly consequentialist and presents the most overtly prescriptive
statement on professional ethical behaviour that might also be relevant to archaeologists. Writing not just concerns of stewardship into this promise, but awarding future societal concerns and sustainable development pride of place has evident political implications. According to this promise, geologists should also be environmentalists – indeed, they should almost be activists.

In institutional terms, archaeology is a hybrid discipline. In the US, for instance, archaeologists are anthropologists and usually placed within social science faculties; in Europe, archaeology tends to be situated in the faculty of humanities; occasionally there and more frequently elsewhere archaeology may also find its home with the natural sciences. Environmental archaeology, at any rate, makes extensive use of geological methodologies, but is by definition concerned with human–environment relations. Environmental archaeology in general, and the subfield focusing on past extreme environmental events and their human impacts in particular, thus have salient points of contact with all the research fields touched on above – and hence also with their ethical concerns. Archaeological ethics, however, tend to be aimed at professional practice, the handling of human remains, interaction with indigenous communities, conflict, conservation and illegal trafficking of antiquities (Zimmerman, Vitelli, and Hollowell 2003; Aitchison 2007; Beaudry 2009), though broader approaches have also been taken (Scarre and Scarr 2006). Current debates on climate change and climate catastrophe – including especially the conception of the Anthropocene and the notion that human history and environmental history cannot meaningfully be separated (e.g. Chakrabarty 2009; Dukes 2013) – make it an urgent matter to embed ethical concerns in, at the very least, environmental archaeological practice. The explicit argument that environmental issues should attract the urgent attention of archaeologists has been made before, initially by Kirch (2005), Mitchell (2008) and van de Noort (2011; see also van der Noort 2013). Building on these arguments, Hudson et al. (2012) also make a powerful case for why and how archaeologists should enter into contemporary debate. However, they also caution against an emphasis on catastrophist scenarios, notwithstanding the fact that the International Panel on Climate Change (IPCC)’s own report on extreme events strongly suggests that natural disasters will become more frequent and more severe in the future (Field et al. 2012). It has long been accepted that ‘natural’ disasters are actually cultural in nature, the product of one or several natural hazards impacting vulnerable communities, putting strong emphasis on also understanding the historical and social constellations of the communities at risk (O’Keefe et al. 1976). When it comes to volcanic eruptions – the hazard of focus in this article – recurrence intervals are often long, giving a particular relevance to ‘palaeo-societal’ records that provide insights over the long term (Riede 2015b).

Case study 1: the AD 536 event

The suggestion has been made that one or a combination of several geological or climate events in the sixth century AD are causally related to widespread distress and cultural changes (Wohletz 2000; Gräslund 2008). Several written sources from China to the Mediterranean record unusual weather phenomena and a persistent ‘dust veil’ that lessened the sun’s warmth and hence depressed agricultural productivity (Gunn 2000; Arjava 2006). One or several causal culprits – volcanic eruptions in East Asia or Central or North America, meteorite or comet impacts – have been pointed to; a very recent study of climatic fluctuations around this time shows that most likely several volcanic eruptions and their atmospheric input together caused a prolonged period, from AD 536 to AD 550, of sustained northern hemisphere cooling (Baillie 2010; Büntgen et al. 2016; Sigl et al. 2015; Toohey et al. 2016). One of the probable contributing candidate volcanoes is Volcán Ilopango in
present-day El Salvador (Mehringer et al. 2005; Larsen et al. 2008; Dull et al. 2010). Payson Sheets has shown in an extensive series of studies how this eruption had likely affected Maya communities in the proximal (<50 km) and medial (<500 km) area (Sheets 1979, 1987, 2001, 2004, 2008; Dull, Southon, and Sheets 2001). Against this background, he has also been able to make concrete suggestions relating to local response mechanisms and mitigation policy (Sheets 2012).

But the reach of this event, most likely in concert with at least one or several other eruptions, went far beyond Central America. In Sweden, the societal crisis of the mid-sixth century has been investigated most intensely. In the Mälaren Valley area around Stockholm, these changes are reflected in a change in settlement patterns across the region, with a cessation of many otherwise stable villages and their attendant burial grounds and a relocation of settlements to higher ground (Löwenborg 2012); changing ritual practices can also be observed, moving from the outdoors to house interiors (Arrhenius 2013). This picture is replicated across all of central Sweden, and extends to many areas of Scandinavia, coupled with a detectible woodland regression into a very large proportion of what had previously been arable land (Gräslund and Price 2012; Price and Gräslund 2015; see these publications for a wider archaeological discussion of the AD 536 event). It has been suggested that not only did agricultural production become depressed due to generally adverse conditions, but that the lower temperatures and increased precipitation led to a spread of endemic ergot, a crop disease that can, in turn, cause traumatic physical and mental conditions in humans (Bondeson and Bondesson 2014). Although less thoroughly investigated, the Baltic area appears to also have been affected negatively by the poor conditions (Tvauri 2014). Potentially, a very significant population collapse may have occurred in the Nordic area in the course of this bad year succession: estimates have been made of up to 50% fatalities, on the basis of settlement abandonment and the evident extreme decline in the cultivation of arable food (Price and Gräslund 2015). Although an explicit link to the geological or climate events of the sixth century AD has never been suggested, the many regulations on agriculture attested in English, Irish, Frankish and German legal sources of the seventh and eighth centuries AD may be the result of – even an attempt to mitigate or capitalize on – difficulties originally experienced in the preceding century; hints of such difficulties may even be found in Scandinavian regulations (Hoff 1997).

In southern Scandinavia, large-scale demographic and economic changes appear to have been instigated by a combination of unfavourable climatic conditions and environmental refugees from further to the north (Høilund Nielsen 2000, 2005, 2006). Furthermore, a very large number of gold objects – in particular pendants (so-called bracteates) possibly related to sun worship – appear to have been deposited in a fervour to appease the higher powers and to let conditions return to normal (Axboe 1999, 2001).

It has been suggested that the old religious – and by implication political – order linked to sun worship and the agricultural cycle was challenged and eventually fell out of favour. It was potentially replaced by a more apocalyptic faith in which the millennial narrative of the end of the world rose to prominence, the core of what has come to be seen as a distinctively ‘Norse’ mythology (Andrén 2014).

The above sketch of the AD 536 event(s) and their aftermath paints a gloomy picture of palpable anxiety and societal collapse. It is worth pointing out, however, that far from all scholars agree on the causal role – or any role – of this particular episode of environmental change. Some see it as essentially an explanatory fad, pitching a catastrophist narrative to readers eager for drama and destruction (Näsman 1988; Wickham 2005).
**Case study 2: the Laacher See eruption (12,920 BP)**

Continental Europe north of the Alps is not known as a volcanically active region. Yet around 12,920 BP, the Laacher See volcano erupted cataclysmically (Schmincke, Park, and Harms 1999). This eruption is part of the Rhenish Shield volcanic zone and is fed by a permanent magma reservoir (mantle plume) deep in the Earth’s crust (Zhu et al. 2012). This eruption has been studied intensely from a volcanological perspective and many details of its eruption sequence, magnitude, intensity as well as the subsequent spread of its attendant volcanic ash (=tephra) fallout are well known (Baales et al. 2002; Riede et al. 2011). The eruption further affected the nearby River Rhine by damming it. This led to the rapid formation of a temporary lake and upstream flooding in the Rhine itself as well as its tributaries in the region. During or shortly after the eruption, the dam broke, sending debris-laden flood waves down the Lower Rhine channel (Park and Schmincke 1997, 2009). Fluvially transported tephra is found all along the reaches of the Lower Rhine as far as the English Channel (e.g. Autin 2008; Janssens et al. 2012).

While the impact of this eruption on climate was likely minor and not long-lived (Graf and Timmreck 2001), its signature in terrestrial and lacustrine environmental archives is subtle but clear (e.g. Magny et al. 2006; De Klerk et al. 2008; van Raden et al. 2013). Despite these seemingly minor environmental impacts, a strong case can be made for specifically human impact, especially beyond the proximal zone (>50 km). Here, heavy ash fall during the summer months would have made it difficult for prey animals to forage, and would have hindered humans in the same way. Furthermore, even slight tephra coatings on ingested food can lead to severe dental abrasion (Riede and Wheeler 2009) and, owing to the fallout’s heavy fluoride (F) load (Harms and Schmincke 2000), F-induced poisoning (cf. Cronin et al. 2000). These combined effects may have led to the temporary abandonment of some parts of Central Europe – where numerous sites show a stratigraphic sequence of occupation–ash fall–abandonment (Riede 2012, 2016)– and the migration of Late Glacial forager groups to southern Scandinavia and their subsequent isolation there (Riede 2014b). This isolation has been suggested to have contributed in turn to the emergence of the regional archaeological phenomenon known as the Bromme culture, which is marked by a for this period uncharacteristically simple flint technology and the absence of arch-backed elements indicative of the key weapon system of the time, the bow and arrow (Riede 2008). While no archaeological remains survive that can inform us about changes in worldview and the kind of anxiety provoked by the events in the sixth century AD sketched out above, a consideration of how the unfolding of this cataclysmic event would have been experienced by contemporaries in regions far removed from the eruptive centre can also in this case provide hints as to how unsettling the years – perhaps even decades – around 12,920 BP may have been (Riede 2015a).

Like the AD 536 event, this scenario has not gone uncontested. Some have suggested that the Bromme culture, instead of being the result of isolation, reflects the seamless adaptation of forager groups to local conditions (Sørensen 2010), or that the dating resolution is insufficient to resolve which environmental or other factors drove the emergence of the Bromme culture (Weber, Grimm, and Baales 2011). Subsequent studies have attempted to address these issues (Riede and Edinborough 2012), but the debate is ongoing (Riede 2013; Buck Pedersen 2014; Riede 2014a, 2016).

**Discussion**

Volcanic eruptions obviously posit major threats to lives and livelihoods in the present (Self 2006; Donovan and Oppenheimer 2014a). Population growth and increasing urbanization further
aggravate volcanism-related vulnerability (Chester et al. 2001; Small and Naumann 2001). Volcanic eruptions are commonly rated on either the semi-quantitative Volcanic Explosivity Index (VEI; Newhall and Self 1982) or on a more strictly quantitative Magnitude (M) scale (Mason, Pyle, and Oppenheimer 2004). The two eruptions that make up this article’s case studies are large, both associated with VEI and M scores of c. 6 (cf. Crosweller et al. 2012). The threat posed by future volcanic eruptions must, however, also take into account the recurrence rate and the potential of human impact in the near and far fields. The Laacher See volcano, for example, is located in the densely settled heart of Europe, close to a large number of key infrastructure installations and in the immediate vicinity of major air traffic hubs (e.g. Frankfurt, Amsterdam) and at least one important water route, the River Rhine (Uehlinger, Wantzen, and Leuven 2009). Assuming analogous ash fallout patterns, 13 contemporaneous countries would be directly affected, from Italy in the south to Russia in the north. For the AD 536 event, similar cooling patterns are expected to cause major pressure on agricultural supply chains (Engvild 2003) with likely follow-on implications for migration and political stability. Indeed, migratory responses (or absolute population decline) stand out as shared features of the two case studies presented in this article, and migration is also the major outcome of more recent eruptions (Witham 2005). Migration brings crises from region to region independently of their point of origin; environmental refugees present a major political challenge in the present (Oliver-Smith 2009; Black et al. 2011).

Both the eruption of Volcán Ilopango and the Laacher See rate quite highly (3–4) on Pyle’s (2000) scale of destructive potential, on a par with volcanoes such as Pinatubo and Laki that are widely considered major threats if they erupt again (cf. Schmidt et al. 2011). Similarly, Scandone, Bartolini, and Martí (2015) have recently proposed a risk-based ranking of volcanoes that projects risk into the future based on basic parameters of past eruption characteristics and the contemporary setting of a given volcano. Their Volcanic Risk Coefficient (VRC) is based on a straightforward rank-based algorithm

\[ K_T + \text{VEI} + \log(\text{N}_{\text{pop}}) \]

where \( K_T \) is time since last eruption, VEI represents the likely worst-case eruption scenario, and the logarithm of the affected population number is meant to capture how many people would be immediately affected by a given eruption. Following Scandone and colleagues’ guidelines, the Laacher See (\( K_T = -5; \text{VEI} = 6; \log(\text{N}_{\text{pop}}) = 7 \)) as well as Volcán Ilopango (\( K_T = -3; \text{VEI} = 6; \log(\text{N}_{\text{pop}}) = 5 \)) would be ranked with a VRC of 8, i.e. they represent – despite or perhaps precisely because of their long quiescence – considerable environmental threats.

Donovan and Oppenheimer (2014a) have tersely outlined how eruptions of this magnitude would challenge existing economic and geo-political orders. They have suggested elsewhere that scientists – especially social scientists – have an important role to play in meeting and communicating these future challenges (Donovan and Oppenheimer 2014a, in press). Similar arguments have been made by sociologists: unlikely but possible disaster events should not be ignored but used as productive planning tools, and scientists should provide the necessary information, inherently uncertain though it might be (Oreskes 2015), for constructing such scenarios (Clarke 2008; Clarke and Molotch 2010). The temporal depth of historical and sociological studies of disaster is limited, however, and it is here that archaeology stands to make a major contribution.

The narrative quality of archaeological accounts concerning past vulnerability and resilience can here provide important input not only for the historically informed evidence-based formulation and parameterization of future impact scenarios, but also for subsequent outreach that can affect people’s behaviour. Better, richer narration about local and regional impacts is said to be missing from official
accounts of climate change and catastrophe (Nielsen 2013; Carter and van Eck 2014). Geo-ethicists, too, argue that narratives are one way to present past human–environment relations to both public and policy-makers (Bohle 2015). Yet most recent analyses show that the humanities, including archaeology, are making only insignificant contributions to major policy-driving reports such as the IPCC outputs (Corbera et al. 2016). One reason for this imbalance may be sought in differential funding regimes. Of the many disciplines involved in disaster risk reduction research, for instance, the natural science and engineering fields receive the vast bulk of financial support (Alexander 1997; Sheets 2012). At the same time, it is scientists in these fields who are also shouldering the greatest responsibility when it comes to prediction and mitigation measures – and their potential failure. Thus, if archaeologists were to take a more involved stance when it comes to future climate and natural hazard risks, it is likely that the perceived insignificance of the discipline would be re-evaluated. Adopting an ethical promise that takes environmental archaeology beyond stewardship and towards action could be one step towards such proactive engagement.

**Conclusion**

Environmental archaeologists have long been interested in the impact of past climatic and environmental changes on human communities (Butzer 2012). Such studies often court controversy precisely because they resonate with contemporary concerns of societal collapse (Middleton 2012). However, the environment features all too rarely in standard narratives of human prehistory and history, other than as a broad canvas or a wilderness to be tamed from Neolithic times onwards. Yet, as Chakrabarty (2009) has powerfully observed, the Anthropocene perspective collapses the once foundational distinctions between environmental, economic and political histories. Adopting the Deep History perspective of Harvard historian Smail (2008), these insights are as valid for recent history as for the distant past. Engaging policy-makers on this basis might offer one avenue towards an ethically engaged environmental archaeology, where archaeology can, at the very least, provide added outreach value to studies of past environments or natural hazards. In other fields of archaeological ethics – for instance, studies of civil war or gender inequality, or work with indigenous or descendant communities – it has been fairly widely accepted that researchers cannot avoid ‘taking sides’. In these cases, archaeology should be applied, and the past should be ‘usable’ (Stump 2013). The politicizing of environmental relations under the label of the Anthropocene (see Braje 2015) makes environmental change, extreme events and their human impact a strong candidate for similar (and similarly political and ethical) engagement for an ‘Environmental Archaeology of the Future’ (cf. Wurst and Mrozowski 2014). The undesirable flip side of such engagement can, however, be the subjugation of the uncertainties inherent in scientific work – also present in the two case studies referred to in this article – to political convictions (cf. Kelman 2015).

An alternative or complementary pathway is that of education. Science museums the world over are tackling the profound societal challenges of the climate change debate (Cameron, Hodge, and Salazar 2013; Cameron and Neilson 2015), yet museums of culture history do so but rarely (Hansen et al. 2014). There are exceptions (Robin et al. 2014; Blæsild and Beck 2016), but these special exhibitions on environmental histories are hardly – if at all – archaeologically oriented and do not reflect an integration of environmental narratives into mainstream narratives of long-term culture history. As Holtorf and Höberg (2015) have convincingly argued, heritage is by definition future-oriented and practitioners are obliged to ask themselves why they are conducting their work and for whom. Conservation, heritage management (stewardship) as well as recording and studying archaeology refer to the future and to future generations. If environmental archaeology then does all these things specifically in relation to environmental futures, an ethical and political
engagement seems, at some level, unavoidable. Framed in this way, past natural hazards in general, and the two cases discussed in this article, arguably present a form of environmental ‘Dark Heritage’ that focuses mostly on the dire consequences of low-frequency/high-magnitude events. Yet, as political economic/ecological events, every disaster has its winners and losers (Scanlon 1988) and they can also be framed as opportunities for societal change (Birkmann et al. 2010; Olshansky, Hopkins, and Johnson 2012), perhaps especially so in relation to our contemporary risk society as suggested by the late Ulrich Beck (2015). Environmental or geo-cultural heritage could here serve as a resource for conceptualizing alternative future engagements, or in the words of Schlanger, Nespoulous, and Demoule (2016, 409), a ‘contemporary future’ shaped in part by catastrophic events. In Japan, suggestions for putting in place heritage networks (Okamura et al. 2013) and even a museum dedicated to the 2011 earthquake and its aftermath (Kikuchi and Nespoulous 2015) are steps in precisely this direction. This environmental Dark Heritage can play a role in mitigation, healing and education. However, the sad irony here is that such initiatives follow only in the wake of major calamities in the present, rather than drawing on the already existing and no less important archive of past disasters. According to Mitchell (2008), archaeologists do have a responsibility to contribute to the debate on environmental change and environmental catastrophe. As a profession, we have very particular methods at our disposal for investigating disasters and their material and societal consequences, and these can be made to work vis-à-vis public engagement with the ethical dimensions of environmental calamities (Dawdy 2009). While we shy away from drafting an ‘Environmental Archaeology Promise’ along the lines of that proposed by our colleagues in geology, a discussion on the pros and cons of such a document might be a vital step along the path towards structured action rather than individual activism.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Felix Riede is Associate Professor and Head of Department in the Department of Archaeology, Aarhus University (Denmark), where he coordinates the Climate|Culture|Catastrophe Network (C³NET; http://c³net.au.dk/). He works primarily in the Palaeolithic, though with thematic interests in evolutionary archaeology, environmental archaeology, contemporary archaeology and their intersection. For some years now, the potential impact of the Laacher See eruption on contemporaneous forager groups in Europe has been the focus of his research.

Per Andersen is Professor of Law in the Department of Law, Aarhus University (Denmark) and, as of recently, Vice-Dean for Teaching at the Aarhus Business School. He is a legal scholar with a focus on legal theory and historical developments in European legal codices, especially in the Medieval and Viking periods.

Neil Price is Professor of Archaeology at Uppsala University in Sweden. He has a very wide portfolio of interests that include the archaeology of religion, of the Second World War and of the Viking period. He has recently focused his attention on the potential impact of the AD 536 event on communities in northern Europe.
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