

But since humans have physically remained the same since the upper Palaeolithic, why look to humans as the prime source of change? Surely what *has* changed is material culture or technology. Why then define this as the Anthropocene?

Solli is, of course, clearly aware of this issue as she discusses the critique of human exceptionalism raised by posthumanism; yet she argues that positing humans as geological agents actually reinforces the hybridity of agency. While she has a point, I do not think this levels the ontology sufficiently: on the one hand, it privileges the human agent in these momentous climate changes (as if humans cut down forests with their bare hands or emit greenhouse gases from their bodies) and, on the other, dangerously preserves a split between human and non-human agents. Indeed, even my scenario of the duel above is not quite flat enough in that respect. To be more accurate, what is really changing in the fight between two people is the ensemble or *assemblage* of human *plus* knife or gun; with every new *x*, the human also changes a little. Each transforms the other and thus what matters here is not so much the individual agent but the collective. This is the point of a relational ontology. Defining a new epoch or age as the Anthropocene ignores this fundamental aspect of the new materialism that is emerging in archaeology.

Indeed, there is an even further irony in Solli's discussion as it relates to her theme of heritage. She asks early on the existential question of how climate change will alter our conception of heritage and narratives of the past. Drawing out the consequences of her own account, the answer would seem to be towards an even *more constructivist* version of the past. Consider the logic: she suggests that one of the consequences for heritage in the Anthropocene would be an increasing trend towards intangible over tangible herit-

age because of flooding or destruction of regions, causing migration and diaspora. As people lose direct contact with fixed or monumental heritage (as opposed to the portable), so memory and heritage values would rely increasingly on memory and narrative. Surely this de-materialization of heritage discourse would actually foster greater potential for constructivism, not less.

In ending, I find the concept of Anthropocene somewhat limiting and even retrograde; Solli actually reminds us of the basic paradox of the concept as formulated by geologists, in that it ultimately rests on the same Enlightenment rationality that created the changes being described. How, then, can it possibly offer anything new? To some extent, Solli's three trajectories could be seen to illustrate this. Archaeology as long-term history of human-environment relations? I work with North American archaeologists who have been doing this before, during and after the linguistic turn, from cultural ecology to the latest resilience theory. It may have been out of fashion among *some* archaeologists in the past 30 years, but by no means all. Archaeology as expert narratives through reflexive methodologies? So, business as usual then. It is perhaps only the last trajectory proposed, archaeology as the discipline where species and cultures meet, that proposes something new – but then, as I have suggested here, I am not sure Solli does full justice to this hybridity and certainly the concept of the Anthropocene, in its very name, seems to indicate quite the opposite.

#### THE NATURE OF ARCHAEOLOGY: BEYOND THE LINGUISTIC TURN

TERJE OESTIGAARD

Brit Solli addresses some thought-provoking questions and prospects regarding the relation between climate change and archaeology in the

21st century. I will not discuss whether the Anthropocene is a better word and description of the time we are living in and therefore should replace the Holocene as a new geological era, but focus on three aspects that Solli addresses: 1) archaeology's relation to nature and climate change, 2) the 'death' of post-processual archaeology or what is left of its legacy and 3) the role of heritage in relation to climate refugees or environmental migrants.

There is an irony in the fact that it almost takes an apocalyptic doomsday perspective before archaeologists start re-considering that nature after all impacts on humans and society. Solli's approach is clearly an alarmist one, which has been common within development and climate discourses. With regard to understanding the consequences of climate change, I will add some aspects, perspectives and predictions with an emphasis on water and agriculture. From one perspective, natural landscapes can be seen as different waterscapes or water-worlds. Deserts are characterised by the absence of water, savannahs and tropical forests have different amounts of water and Arctic areas are covered by snow and so on. Importantly, these water-worlds change throughout the year. Water is constantly circulating on the planet. The hydrological cycle – the amount of precipitation at a given place and time (as rain or snow), when it occurs and for how long it lasts or disappears – forms different seasons. The appearance of water in different forms, such as rain, rivers, lakes, waterfalls, wells, ponds, underground pools or snow or glaciers, has fundamentally influenced the world humans have lived in and continue to live in.

Today, in an age of uncertainty where climate change is threatening the planet, the consequences of climate change take form of changes in the water-worlds. Although climate change is caused by increasing emissions in the atmosphere leading to a predicted temperature increase of between 2 and 5 degrees Celsius by the end of this century, the consequences are experienced as changing waterscapes and changes in the

hydrological cycle. Climate change is after all the sum of weather changes over time. Climate change involves the melting of glaciers and ice-caps, but also increased evaporation in some places due to increased temperatures. Thus, will there be heavier rainfalls and more floods? Or will there be less rain, increasing droughts and shrinking levels of water in rivers and lakes? And, importantly, where will there be more water and where will there be less water?

The IPCC has identified small island states, Africa, mega-deltas in Asia (such as Bangladesh) and polar regions as places which will be hit hardest by climate change. With the global population expected to reach 9 billion by 2050, there will be increasing pressure on water use for agricultural production. It is expected that food demand will increase by 70–90% (Fraiture *et al.* 2009:124). Water use will continue to increase not only because more mouths have to be fed but also because people are richer and consume more water-demanding products such as meat, fish, dairy and sugar. Still, if the water for agriculture is managed better there will be enough land and water resources to produce food for the next 50 years feeding 9 billion people (Fraiture & Wichelns 2010:502). That is, of course, possible only with good governance globally, and the failure of, for instance, the UN Climate Change summit in 2009, as Solli points out, may indicate that that it is not very likely.

Climate change has different impacts in different regions of the world. It is estimated that by 2050 the rivers' annual run off and water availability will be reduced by 10–30% in dry regions and dry tropics and that rainfall in Africa will have declined by 5% and become more variable; also, heavy precipitation is likely to increase and thus the dangers of flood are increasing. The impacts of climate change on agricultural practices will involve reduced soil fertility and increased attacks of pest due to increased temperatures and decreased livestock productivity. The

consequences of extreme weather haunt poor countries and about three of four natural disasters are weather related, such as droughts or floods. Moreover, 97% of deaths occurring from natural disasters take place in poor countries (Holmberg 2008). Thus, apart from rising sea-levels, increasing and prolonged floods and droughts create environmental migrants on the move (the UN does not recognize climate refugees as real ‘refugees’). Today it is estimated that there might be around 50 million environmental migrants, and this number is predicted by the IPCC to increase to 150 million by 2050; other predictions suggest between 200 and 250 million people and that up to 1 billion may lose their homes.

Thus, nature obviously matters, and in particular changes in the hydrological cycle and the different water-worlds have throughout history had a significant impact on development and the disappearance of societies and civilizations. Environmental history is not only about how humans impact on nature, but also how different environments create various possibilities and constraints for social development throughout history (Tvedt 2010). Humans have always adapted to, used, exploited and been constrained by the water-world they have lived in according to their technological know-how, cultural traditions and ideological and religious world-views (Tvedt 2010, Tvedt & Oestigaard 2010). Why has archaeology neglected nature?

Looking back at post-processual discourse, it looks rather odd, and I am afraid that Solli is right when she wonders if a lot of the debates inspired by the ‘linguistic turn’ from the 1980s onwards were rather useless; one may also ask what they really were about. Moreover, within this discourse there has been, and still is somehow today, an implicit agreement that if anyone includes natural variables as relevant it has been legitimate and indeed necessary to ostracize that person by saying ‘Binford’ and ‘determinism’ without any further arguments irrespective of how natural parables have been given meaning.

This tradition of neglecting nature goes beyond the linguistic turn. Since Émile Durkheim (1858–1917), the father of sociology, there has been a dictum in social and human sciences that social facts can be explained only by other social facts (Durkheim 1966 [1904]); natural variables and the physical world were left out as research topics in the humanities and social sciences. C.P. Snow (1966) characterized this scientific divide as the ‘two cultures’ – a universe of humanities as opposed to the natural sciences. Indeed, this tradition, where humans are seen as living apart from nature, has dominated Western thought and been advocated by, for instance, sociologists like Anthony Giddens. According to him, before the industrial era people were at the mercy of natural disasters such as plagues and famines whereas in ‘industrialized countries today we are largely immune from these insecurities; our uncertainties about the future derive from the social forces we ourselves have unleashed’ (1989:632). With climate change and changing water systems the truth could not be more different, bearing in mind, for instance, Hurricane Katarina in the US in 2005. Hence, using the old frameworks for understanding is not particularly intellectually rewarding: perceiving the hurricane as merely a social construction is lunacy and one is not a nature determinist if one says that it mattered and impacted on humans and society (almost 2000 died).

Thus, Brit Solli’s call for approaches which open up possibilities for studying long-term human-environment adaptive strategies is important and most welcome because, if not, one misses crucial mechanism and social processes at work in history. It is therefore possible to combine the best of post-processual archaeology without being trapped in either the extreme linguistic turn or an alleged ‘Binfordian determinism’ (e.g. Oestigaard 2004). This also poses new theoretical challenges beyond the scientific divide of the ‘two cultures’ where, with water as an example, ‘it is possible to reconstruct,

describe, delineate and understand its movement and role in nature and in society and at the same time evade the problems created both by natural or biological determinism and social constructionism' (Tvedt 2010:146).

Apart from acknowledging that nature (e.g. water/climate) matters and that is not only a construction, it is perhaps symptomatic for how extreme aspects of post-processual archaeology have gone wrong when archaeologists have to argue that heritage is not only made, but found. Given the nature (*sic*) of archaeology, artefacts excavated and surveyed are definitively found, not only made or socially constructed, as Solli also points out with regard to structures like Stonehenge and the Veøy church. With climate change heritage will also be lost (and perhaps found again in the future), and, as indicated, up to a quarter of a billion people may become climate refugees.

Although we as archaeologists will argue that archaeology is important, I am not sure that the heritage question and narratives of the past are almost existential in character, as Solli suggests, given the fact that the majority of the people on the move will be driven from their lands into even deeper poverty, struggling for food, water and survival. I doubt that cultural heritage will be their first priority. Moreover, for two reasons, I am not sure if these challenges are best understood and handled in frameworks of diaspora, homeland and original core identity.

First, 'identity can *only* be understood as process, as "being" or "becoming". One's identity – one's identities, indeed, for who we are is always singular *and* plural – is never a final or settled matter' (Jenkins 2004:5). It is a process of *becoming* and *new belonging*, which will be even more important when people are displaced or coming to new places. As an example, approximately 900,000 Norwegians emigrated to the US by the end of the 19th and in the early 20th

century due to poverty – half of the country's population – and, although they have had strong identification with Norway, this identity was transformed in the US 'melting-pot'. Second, homeland and core identity bear resemblance to 'Fatherland' and primordial ethnicity – concepts which historically have caused more problems than solutions when operationalized and politicized (e.g. Oestigaard 2007).

In any case, Brit Solli has raised important issues and concerns which archaeology will have to address in the 21st century, and the theoretical challenges will re-define the discipline itself. Post-processual archaeology in its purely 'linguistic form' is dead, or, from a climate perspective, perhaps drowned. There is a real world out there which matters, and we will experience the reality of nature more in time to come.

## LOOK! IT'S A COLLECTION OF ROCKS!

LAURAJANE SMITH

As the historian, Raphael Samuel observed, 'heritage' has been 'hospitable to archaeology' (1994:275). Archaeology has become synonymous with common-sense ideas of heritage (as have architecture and art history). The archaeological literature, for instance, abounds with the phrase 'the archaeological heritage'. This is a curious phrase. Rather than referring to heritage that archaeologists collectively find interesting and significant, it has come to stand for those things that all of us (i.e. humans as opposed to archaeologists) should understand as being of universal heritage value. The tendency to conflate archaeology with heritage has helped to give archaeologists a significant role in the preservation of past material culture, and our pursuits a certain public 'authority'. The traditional archaeological