Review of: "The Anthropocene Borderline Problems"

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This paper discusses the philosophical underpinnings and societal implications of considering the Anthropocene as an epoch, episode, or event. The paper is interesting and thought-provoking and could be useful as a reference to the epistemological and conceptual debates regarding the Anthropocene. However, the paper at times also suffers from a lack of clarity in terminology, some organizational problems, and missed opportunities to delve further into some of the concepts raised. Here are my specific comments/suggestions:

1. Early on in the paper, there should be clear definitions of the concepts of epoch, episode, and event as used by stratigraphers. As is, these concepts are defined fairly late in the paper and not all that clearly. In particular, a distinction needs to be made between episode and event. Examples from earlier in the geological record would be helpful in, for example, providing illustrations in which a geological event led to a new epoch, as well as instances in which events occurred within an epoch.

2. The organization of the paper makes the arguments more difficult to follow than they need be. For example, sections 2.3 to 2.5 are labeled “Observing geo-societal features” I, II, and II, respectively. What is the purpose of these multipart section headings? They don’t provide any signposting for the reader. Instead, they should either be combined into a single section headed “Observing geo-societal features” or the different sub-sections should be given more descriptive headings that help guide the reader through the structure of the paper.

3. At the start of Section 2.2., it is mentioned that the Anthropocene was initially conceived by Earth system scientists, not stratigraphers. This is an important point that could be further expanded upon to shed some light on the central epoch-event dichotomy that is the focus of the paper. With their reliance on local field science and well-defined geological boundaries, stratigraphic approaches necessarily require conceiving of geological time using the epoch/period/era system of the GTS. They also are focused on lithological processes and include other elements of the Earth system – climate, biology, human society – insofar as these are recorded by the stratigraphic record. In contrast, Earth system science is inherently global in scope, relies much more on modeling approaches, and is concerned with interactions and feedbacks among Earth systems. It also focuses on processes that may or may not be recorded stratigraphically, depending on the rate of the process and whether there has been sufficient time for it to affect lithological processes. Much of the debate around the Anthropocene relates to the distinct approaches taken by these different fields of Earth science. Stratigraphers need a well-defined stratigraphic marker to identify the start of the Anthropocene, while Earth system scientists conceive of a broad set of interrelated changes to Earth processes related to human activity that are much fuzzier to fix in time.

4. The suggestion in Section 3.3. that the Anthropocene could effectively be defined as the end of the geological past and the start of the geological present is an interesting one, but there are a number of caveats that should be further elaborated. First, it would be interesting to explore the implications of this view for the central geological concept of uniformitarianism, the idea that the processes shaping landscapes of the past are the same processes at work on landscapes today. Although the modern view recognizes that this gradual landscape evolution is punctuated by periodic catastrophic change, the idea that the Anthropocene marks the end of geological history would significantly challenge even this modified version of uniformitarianism. It would mean that the standard motto of “the present is the key to the past” would no longer hold, because the present would be in a different state than the past, governed by different (i.e. anthropogenic) processes. Second, it is perhaps overstating things to say that the Anthropocene is s state shift in Earth system dynamics. Although humans may now be a major driver of Earth system processes, other non-anthropogenic processes (e.g., volcanism, tectonics, natural erosion and sedimentation) still continue. So the Anthropocene is not really the end of the geological past, it is the beginning of a time in which humans have a large enough cumulative impact on global Earth systems that our actions are recorded in the stratigraphic record along with the longstanding natural processes. Another way of saying this is that the Anthropocene marks the beginning of the global environment. Earth systems themselves (atmosphere, hydrosphere, lithosphere, biosphere) were of course always global, but the environment (the relation between humans and Earth systems) only became global with the advent of technology that could modify Earth systems at a global scale. It is this phenomenon that the Anthropocene marks.