

The Anthropocene's stratigraphic reality and the humanities: a response to Finney and Gibbard (2023) and to Chvostek (2023)

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Received 1 June 2023; Revised 11 July 2023; Accepted 31 July 2023

ABSTRACT: The Anthropocene Epoch is a crucial conceptual breakthrough not only for stratigraphy but also for the humanities. The question, raised by Chvostek (2023), is how best to create engagement between the sciences of the Anthropocene and the study of values, hopes and power in the world's many cultures past and present. In response, this piece makes three points. First, it discusses some of the collaborations that have already taken place between humanists of various kinds and the scientists providing the stratigraphic evidence for the Anthropocene Epoch. Second, it notes that the 'Anthropocene' remains, at core, a stratigraphic concept and that the new epoch is now well supported by physical evidence. Third, it shows that the recent idea of an Anthropocene 'event' (Gibbard, 2022) does not invite engagement with the humanities. The overall argument is that the integrity of expertise must be maintained even while we encourage the cross-disciplinary understanding crucial to addressing our global environmental challenge. © 2023 John Wiley & Sons, Ltd.

KEYWORDS: Anthropocene; history; humanities; multidisciplinary; stratigraphy

The term 'Anthropocene' invites cross-disciplinary conversation. In combining 'cene' (the suffix for the geological epochs within the Cenozoic Era) with 'anthro' (indicating the human), it summons us to think again about the relationship between the non-human and the human. For this reason, as Ida-Maria Chvostek (2023) notes, 'Anthropocene' has 'breached the levees of geology' and been widely discussed beyond the natural sciences. It captures the *zeitgeist*, the sense of a world recently, definitively and irrevocably transformed through unprecedented global growth in human population, production, consumption, waste, migration and inequality. Chvostek calls on scientists to invite humanistic perspectives, to expand their ratification process, and to consider designating an accessible global boundary stratotype section and point (GSSP) site where 'parents and educators can bring children and teach them about our most recent history'. In their response to her essay, Stanley Finney and Philip Gibbard, leaders of the International Commission on Stratigraphy (ICS), say that her plea for interdisciplinarity 'must be rejected'. They suggest that 'the human(ities)' contribute instead to the recently proposed idea of an 'Anthropocene event' (Gibbard et al., 2022) encompassing a diachronous, diffuse welter of human activities beginning some 50 000 years ago.

This exchange prompts three observations. First, Chvostek's important call for cross-disciplinary engagement has already been fulfilled in a number of ways, even though there is more to be done. When the Anthropocene Working Group (AWG) was founded in 2009 to consider Paul Crutzen's intuition that Earth no longer functions within Holocene norms, it invited experts in history, archaeology and law for input. Historian John R. McNeill contributed to the conceptualisation of the mid-20th century 'Great Acceleration', correlating global social trends with the physical ones to explore why 'so much environmental change happen[ed] in the twentieth century' (McNeill, 2000: 267). As McNeill pointed out, human history

is replete with locally unsustainable societies, but only in the last several decades have we confronted the prospect of an 'unsustainable society on a global scale' (McNeill, 2000: 358). This difference between local impacts that human beings have always had and global transformation is key to understanding the Anthropocene as a human phenomenon as well as a geological one. However, when it comes to weighing the stratigraphic evidence for the new geological epoch, non-scientists on the AWG have taken a back seat. They rightly did not vote on the AWG's selection of a GSSP candidate, the so-called 'golden spike'.

On 11 July of this year, the AWG announced their proposed site for this GSSP: Crawford Lake in Ontario, Canada. The research on the unperturbed depths of this lake has long involved cross-disciplinary and cross-cultural efforts. Geologist Francine McCarthy and her team, building on the work led by Jock McAndrews going back to the 1970s (Roberts, 2014), engaged with First Nation peoples and other constituencies as they explored the evidence (McCarthy in Thomas, ed., 2022). Their core samples reveal not only the gentle changes of the Holocene when indigenous people lived in the area from the 13th to the 15th centuries, but also the abrupt developments of the Anthropocene (McCarthy, Patterson, et al., 2023). This is another example of the approach Chvostek calls for.

Beyond the AWG itself, other institutions promoting multi-disciplinary approaches include Sweden's IHOPE (Integrated History and Future of People on Earth Research Network) in Uppsala; Korea's Center for Anthropocene Studies at KAIST University in Daejeon; the University of Virginia's Institute for the Humanities and Global Cultures under Debjani Ganguli; and Germany's Max Planck Institute of Geanthropology in Jena. Books such as *Altered Earth: Getting the Anthropocene Right* propose that a democracy of voices be brought to bear on the scientifically grounded understanding of the Anthropocene (Thomas, 2022). With contributions from writers as diverse as novelist Amitav Ghosh, Earth System scientist Will Steffen, Russian historian Kate Brown, AWG members Jan Zalasiewicz and Mark Williams, and IPCC climatologist Minal

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Pathak, it invites the kind of conversation that Chvostek advocates. Contributions by ethicist Clive Hamilton and anthropologists Cymene Howe and Dominic Boyer address issues of justice and power in ways outside the competence of Earth scientists, yet centrally relevant to understanding the new epoch. Popular cross-disciplinary understanding has spread through films such as *Indiana Anthropocene: An Aerial Exploration of the Anthropocene within the Borders of Indiana* by Zach Schrank et al. (2023) and through journals such *Sekai* (The World), 2021 a leading Japanese publication with a special issue on the Anthropocene in 2021.

The second observation prompted by the exchange initiated by Chvostek has to do with the scientific foundation of the Anthropocene. Finney and Gibbard's point that the proposed Anthropocene remains, at core, a stratigraphic concept is critical. This can be fully agreed (Head, et al., 2022). Any new addition to the geological time scale must conform with the aim of the ICS to 'establish a single hierarchical set of global chronostratigraphic units with precisely defined boundaries that can be correlated as widely as possible' (Finney and Gibbard, 2023). To conform with this aim, the AWG has proposed an Anthropocene GSSP substantiated by evidence of distinctive, global and near-synchronous strata with a lower boundary in the mid-20th century. The scientific imperative of a clear stratigraphic marker overrides subsidiary hopes raised by Chvostek such as the accessibility of the GSSP site to school children. Fortuitously, however, the Crawford Lake site is in the Toronto suburbs, already much visited by those interested in wildlife and in the indigenous history represented by reconstructed longhouses. It can serve as the new epoch's outdoor classroom.

The third and most essential observation has to do with Finney and Gibbard's assumption that the 'human(ities)' should serve as handmaidens to geology, producing information to be absorbed within the umbrella of Earth science. This is a misunderstanding. Instead, the humanities provide a type of knowledge about the Anthropocene quite different from that of the sciences. Their central mission is to consider not just what happened but the human motivations behind it and what they mean for future possibilities. This research concerns values, ethics and politics, both historically and normatively. Unlike a GSSP which is correlated globally, no human value, idea or experience has universal salience or remains the same over time. Historically, individuals and cultures manifest a breathtaking array of conflicting visions of right and wrong, good and bad, that are neither determined by physical conditions nor are ultimately responsive to them—and yet some of them help drive the Anthropocene.

Take something as basic as our approach to death. Even here there is no agreement. Some people assume that survival, individual or collective, is always desirable. For instance, philosopher Regina Rini (2019) suggests that everyone wants to live forever and that technological and medical interventions to that end are alluring to all. Others, however, are less resistant to death, and some find in it a deeper meaning making it more attractive than life in some circumstances: not something to be avoided at all costs but something to be embraced sometimes individually, sometimes collectively. Examples include honour cultures where death and even murder are preferable to disgrace. For instance, the right course of action in 1868 from the perspective of a samurai woman from Aizu during the hopeless struggle to preserve the Japanese shogunate was to kill her children and in-laws, and then seek her own certain death in battle (Nimura, 2016). Others welcome death or commit murder for religious reasons through self-starvation, living entombment and human sacrifice, both in the past and present. Whole communities have

chosen annihilation over cultural change or subordination to another group. If cultures have such different views of life and death, they will inevitably grapple with the Anthropocene with divergent aims. These differences can only be adjudicated humanistically, not scientifically.

Competing values in the Anthropocene must often be weighed against one another since at times there is no single right answer and sometimes only wrong ones. Take the instance of Uganda's Rift Valley. Few would deny that preserving the remaining biodiversity there is imperative. On the other hand, feeding Uganda's population, projected to double by around 2050, is also imperative, and this will be more difficult as soil conditions, climate and biodiversity decline. Which imperative should win out and how? Who should decide? These questions speak to the dilemmas of the Anthropocene, but cannot be answered by science which only provides the perimeters of possibility. Understood humanistically, the Anthropocene presents not a single story but multiple, sometimes incompatible, stories about the same planetary epoch. These stories will change through time. Even geologists' stories have changed. Geologists cognizant of their own history, as is Iain Stewart, recognise the transformed ethics from the time when oil exploration was touted as a great good for humankind to today's scepticism of a field which has put the 'planet in peril, along with enduring and deepening social and economic inequalities' (Stewart, 2023).

Another roadblock to constructive engagement with the 'human(ities)' by Earth science is Finney and Gibbard's concept of 'event'. In contrast to the Anthropocene Epoch as proposed by the AWG, they define the Anthropocene event as diachronous, heterogeneous and extending over tens of millennia and then invite humanists to join them on this basis. Their satellite view of earthly developments diminishes the very recent, global intensification of human and natural resource exploitation underscored by most non-scientists concerned with the Anthropocene (e.g. Angus, 2016; Bonneuil and Fressoz, 2017; Chakrabarty 2021; DeLoughrey, 2019; Foster, 2022; Meneley, 2021; Saitō, 2022; Scranton, 2015; Thomas, et al., 2020; Yusoff, 2018) and erases the possibility of political engagement and change. Moreover, an 'event' as defined by most historians is revolutionary not evolutionary. French historian Judith Surkis uses three criteria to define an event: concision, homogeneity and uniformity. By these criteria, not even the decade-long 'linguistic turn' of the 1980s qualifies, let alone developments beginning in the Pleistocene (Surkis, 2012). Likewise, philosopher of history Martin Jay distinguishes between run-of-the-mill occurrences best understood through contextualisation and the startling events of history which 'radically upend their contexts'. Events, Jay argues, break with patterned regularities and escape their context to be 'world-establishing', 'inaugurating their own history' (Jay 2011: 564). 'Event' as used by most historians conforms closely to the world-altering Anthropocene Epoch defined by the AWG.

Finney and Gibbard propose the Renaissance as an analogy for their event. Few scholars of the Renaissance would recognise the scientists' description of it as 'varied human activities and products (art, literature, banking, architecture)' that emerged at some unspecified time and 'spread throughout western Europe and then the world'. Instead, the efflorescence of humanism beginning in northern Italy in the late fourteenth century should be more precisely defined. Without Poggio Bracciolini's recovery of ancient Greek texts by Lucretius found in palimpsest in a southern German monastery or the perfect circle painted by Giotto as described in Vasari, the Renaissance is devoid of content. It was not merely 'varied human activities'. Nor can it be accurately described as spreading into the cultures of Asia, Africa

and the Americas. An Anthropocene that is as unspecified and as western as Finney and Gibbard's definition of the Renaissance would not be an Anthropocene.

'Origin' is another bone of contention (Sideris, 2023). Chvostek is right that 'Anthropocene' does not refer to the first moment people began to change their environments, as Finney and Gibbard seem to claim. *Homo sapiens* and our preceding hominid ancestors have always impacted our physical and organic environments. This *anthropogenic* change is quite different from the *Anthropocenic* planetary transformation of the mid-20th century. Long ago, historian Marc Bloch warned of the fetish of origins, especially the fetish of a single origin (Bloch, 1953). The start of something should not be confused with its outcome. Nor should origins be thought to determine ends. Some have tried to trace the recent creation of a human-dominated world to the origin of the solar system or even the Big Bang. Multicellular life, bipedalism, the mastery of fire, the development of stories, painting and music, the invention of agriculture and cities, the idea of beauty and of sanitation, the Haber-Bosch method, and almost everything else could be included in a story as indeed Big Historians such as David Christian attempt to do. But the limitations of such an approach are obvious: contingencies are overlooked; description replaces political analysis (Hesketh, 2014). The very possibility of the social transformation needed to address the Anthropocene is eliminated and subsumed into an inevitable continuum. Humanists, on the other hand, craft stories where origins need not determine ends.

Chvostek's call for cross-disciplinary engagement is constructive, but this is best conceived of as a multi-disciplinary conversation keeping alive the distinctive contributions of different forms of knowledge, rather than an interdisciplinary effort under the imperative of a single set of questions and methods. The contributions of humanists and social scientists to the Anthropocene cannot be absorbed within Finney and Gibbard's 'event'. To do so would be to erase the multiple, contending political and cultural values and stories explored by research outside Earth science where the very concepts of 'event' and 'origin' are deployed differently.

Data availability statement

This commentary was not reliant on data but on research in the humanities and an understanding of stratigraphy and Earth System science.

Abbreviations. AWC, anthropocene working group; GSSP, global boundary stratotype section and point; ICS, International commission on stratigraphy.

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