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## **Geo-narrativity: Anthropocene, Aesthetics, Forensics**

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### **Deep-time aesthetics**

It was May 2018, the end of a three-day meeting of the Anthropocene Working Group (AWG), held at the Max Planck Institute for Atmospheric Chemistry, in Mainz, Germany. The generosity of AWG members is such that I was permitted to attend in my capacity as ‘participant observer’, as part of my doctoral research concerning the AWG’s ongoing effort to formalize an Anthropocene geological unit. I was supposed to stay with a friend in Frankfurt for a few days, but the proceedings of the meeting were such that I decided I needed to get home and write up my thoughts and observations as soon as I could. When a senior geologist, who carries a formidable reputation within the community of chronostratigraphers who are dedicated to the construction and maintenance of the Geological Time Scale – a chart that lists the categories of planetary time and space for the entirety of Earth’s 4.5 billion years – offered to drive me all the way back to London, I figured this would be a unique opportunity to access a slightly different narrative about the Anthropocene hypothesis. This geologist has voiced some of the most well-articulated reservations concerning the case for an Anthropocene unit; not because they do not sympathize with the premise that human activity has altered the material constitution of the planet, but on methodological grounds, such a unit would simply be too recent in time to merit formalization. And besides, a geological unit premised on the advent of human activity already exists: the Holocene has as one of its markers the first appearance of homo sapiens remains in the fossil record.

During a rest-stop at a petrol station on the outskirts of Frankfurt, the geologists called me over to a balcony that overlooked an impressive vista of the Rhine valley. Both geologists had spent

some time in that region conducting geological surveys. I told them that the view was beautiful. They agreed, and proceeded to describe the material transitions that the landscape had undergone over the course of several million years. I didn't understand what they were talking about. Where I saw a mountain, they saw a text-book specimen of late Eocene rift flank uplift. They described the formation of glaciers many thousands of years ago, cracking open the mountain, forming deep ridges, eventually subsiding into rivers and strips of abundant vegetation. They recounted the events with enthusiasm, albeit with a certain casualness, as if it was a story that was familiar to us all; as if we had heard it all before. My ignorance persisted. What struck me instead was the gap between what was immediately before us and what they could see. Using their hands, they orchestrated the trajectory of the landscapes unfolding over *deep time*, indicating the rhythm of inter-glacial and tectonic events. I took more from their ability to recount geological episodes, and narrate material landscapes, than from the content of their description. At my request, we took a selfie with the vibrant landscape behind us, before continuing our drive.

Geologists tend to perceive Earth as a dynamic entity. Not so much in the sense of Lovelock's Gaia, which has often been misinterpreted to assign mystical sentience to Earth as a single, conscious entity (Clarke, 2020). Rather, Earth is understood as geologically dynamic to the extent that, as Charles Lyell put it in the subtitle of his *Principles of Geology* (Lyell, 1883, former changes of the Earth's surface are often explainable by reference to causes now in operation. A geologists ability to 'see' ongoing processes where a lay person like myself sees mountains, is then more properly a demonstration of what Latour (1999: 24-79) called *circulating reference*. In his own participant observation, Latour recounts the gradual process of conversion enacted by a group of soil scientists working in the Amazon rainforest, which sees the translation of a patch of soil into a universal, scientific *fact* about the encroachment of the savannah into the forest. What interested Latour, by his own admission, was how 'the transformation undergone by the soil [becomes] bound up in words' (ibid: 68). Latour refers to 'chains' of reference that iteratively link 'world' to 'words'. The soil scientists use string to delineate an area of soil; they divide samples into discrete boxes; they assign a code to each sample using a colored swatch sample; that code then stands in for the material sample, allowing them to communicate specific details to a lab on the other side of the world, in France. Through successive stages of material practices, the local, particular, material is 'amplified' into the compatible, standard, calculable, and universal.

The point here is not simply the *agency* of the cardboard boxes, swatch panels, and other artefacts that facilitate this process of conversion. Rather, what interests me in the case of the geologists is the way in which those material practices present a counter-intuitive account: the geologists solicit the narrative competencies of objects such as fossils, rocks, and sediment samples, in such a way as to remove themselves from the equation. The geologists' art lies in their ability to speak *on behalf* of landscapes *as if* they were *not* fabricating a particular narrative, but instead simply recounting testimony solicited from the material artefacts comprising the mountain-range. So compelling was the narration of shifting landscapes just beneath the balcony of the Frankfurt rest-stop, that more than "just" a demonstration of geonarrative technique, the occasion suggested a distributed sensibility of geologist and landscape. Rivers meander; glaciers expand and retreat; flora and fauna migrate, and geologists measure, observe, interpret and narrate. Keeping Lyell's aphorism in mind, in which planetary materiality demonstrates procedures still in operation, the geological dynamics narrated are constituted equally by a practice of narration as much as by a sensitivity toward experience particular to the landscape itself; an appreciation of what *it* has endured irrespective of the temporal and historiographic frames familiar to, or imposed by, any human.

Attendants of the Mainz conference witnessed the contingency of narrative practices and, what might popularly be called 'more-than human' sense perception in geology. Presentation after presentation, AWG members shared meticulously crafted graphs, charts, and infographics, supported by a range of complex analyses of sediment samples collected from around the world, at great expense of time, money and expertise (the AWG had, at that time, failed to secure funding for their research endeavors from any of the traditional sources). Since their founding in 2009, the AWG have worked to assemble this material into a compelling narrative. Its success hinges on the willingness of their peers to adopt the story in their own accounts of ongoing planetary dynamics. The geologists who narrated the trajectory of the Rhine valley to me during our drive, however, remain vocal sceptics of accounts provided by AWG members. They simply do not believe the stories told by AWG members. And yet they do not dispute the materiality of the sediment samples and rock cores the AWG's charts, graphs and analyses are based on. Rather, they perceive methodological and conceptual problems in understanding how raw material is folded into the narration of 4.5 billion years of planetary history. The hypothesis of an Anthropocene geological unit, in other words, is only as successful as the willingness of a community of geologists, in particular those affiliated with the Geological Time Scale, to

accept the story told to them by the AWG, and implement it into their own narrative practices accordingly.

### **Fossils: planetary forensics**

At this point, it is useful to speak directly to the AWG's narratives of Earth history, and how an Anthropocene unit fits therein. Formalization of an Anthropocene unit would be an unprecedented event for geology. Geology is a discipline that occupies itself with vast spans of time, stretching up to four and a half billion years. Geological research, and the decision making procedures involved in the formalization of a new unit (Damianos, 2022), often feel similarly expansive in time and tempo. The Anthropocene Working Group was commissioned in 2009, to examine the suitability of the Anthropocene hypothesis, as articulated by Paul Crutzen and Eugene Stoermer in a series of articles (Zalasiewicz, 2009; Crutzen & Stoermer, 2000; Crutzen, 2002), as a unit of the Geological Time Scale. Since then, there has been a remarkable effort to designate the material characteristics such a unit would possess. With the possible exception of the Jurassic, no other unit of the Geological Time Scale has achieved the reputation of the as-of-yet unformalized Anthropocene. Almost all other units of the Time Scale, and even those that are currently under consideration by a Working Group and not yet formalized, has been proposed this side of the Twentieth Century. That is to say that the Anthropocene unit was assembled remarkably quickly, by geological standards, and that its reception beyond the geological community has taken all those involved in the formalization process, whether for or against an Anthropocene unit, by surprise. For that reason, the AWG's formalization effort provides a unique insight into the process of constructing geo-historical narratives.

To the extent that the unit was first proposed "outside" of geology, the AWG have had to work somewhat counter-intuitively.<sup>1</sup> As Pottage has observed, the AWG's efforts have entailed 'a reversal of the forensic approach of modern geology.' Rather than 'beginning with the fossil and eliciting context from it, one begins with the context and finds the *Leitfossil* for that context' (Pottage, 2019: 154). In the AWG's own words, the object is to identify 'the environmental trends picked out as of major significance to contemporary global change by the Earth system science community,' and consider 'whether or not they will leave a recognizable signal within strata' (Zalasiewicz et al., 2017: 88). As such, the AWG attempt a speculative geology. Rather than piecing together material evidence to (re)construct a narrative of what happened in the deep past, the AWG seek to apply methodology and knowledge in

order to advance a speculative account of the near and deep future. Geological techniques of narrating the *deep-time* of Earth's 4.5 billion year historical accumulation, in other words, are applied *speculatively*, to consider what sediments *will* amass, as well as how their legibility might be determined in advance.

What kinds of techniques facilitate the speculative geologies of the Anthropocene? How do they cultivate a sensitivity to geological deep time unfolding in the present? A key strategy that I wish to focus on in this chapter involves the appropriation of paleontological techniques – according to which fossil remains in sediments are used to correlate and thereby chronologize the planet's material archives – to the present and future accumulation of geological deposits. Such practices are characteristic of the AWG's *speculative forensics*, drawing on established practices of geological dating and correlation, but taken out of their familiar habitat of deep past and instead applied to the future.

Geological observation has always been characterized by a practice of associating material deposits to temporal markers. To that extent, geology could be thought of as the original forensic science. In the late 17<sup>th</sup> Century, 'natural historians' initial attempts were made to narrative planetary history by reference to artefacts. Shark's teeth encased within rocks, large bones of unfamiliar creatures, or acknowledging that *kinds of rocks* (chalk, limestone, marble) tended to appear in a predictable order, led observers to characterize 'natural antiquities' as a distinct class of artefact from the vases, coins, and tablets used to piece together accounts of pre-historic human civilizations. Using 'natural antiquities' as a category of artefact not only facilitated access to foregone times and places, but to novel modes of verification as well. Take, as an example, the efforts of the 17<sup>th</sup> Century priest Athanasius Kircher, who was so impressed by the size of some fossils that he sought to apply his findings to verify the facticity of scripture. If *The Book of Genesis* recounts the episode wherein Noah's Ark carries two of every creature, then given the size of fossil remnants, how large would the vessel have been? How was it constructed? How would animals have entered; and where would they have slept and ate? In total earnestness, Kircher drafted blueprints of the vessel as suggested by the size of these newly discovered fossils, along with illustrations of the Ark's construction (Kircher, 1675; Rudwick, 2017). Kircher's story is just one among several that demonstrate a profound shift in the perception of spatio-temporality evinced by the advent of *fossils* as a novel category of epistemic artefact. In short, it was no longer the case that scripture provided the authoritative account of planetary genesis. With the advent of 'natural antiquities', it became possible to

verify the account provided by scripture by reference to experience and observation of a material environment. It is in this sense that geology can be understood as the original forensic science.

Most ways of reading the ‘signals’, or material indicators, of an Anthropocene unit are derived from insights afforded by early ‘natural historians’ who took an interest in ‘natural antiquities’ developing these insights to devise techniques of geological narratology. For example, *superposition*, first posited by Nicolas Steno in the 17<sup>th</sup> Century, holds that rocks are composed of regularly deposited layers of sediment, which may subsequently be disrupted by volcanic eruptions, plate tectonics, bioturbation (the movement of plants and animals) (Rudwick, 1985; Gould, 1987). The signals can be referenced, or *correlated*, to rock bodies across the world to weave together an account of truly *geological*, that is *planetary* (rather than local) and *synchronous* (rather than diachronous) events that are then used to break the vastness of 4.5 billion years of Earth history into smaller, more manageable chunks of time and space, known as ‘units’.

Chicken bones, cement foundations of buildings, an explosion in synthetic fertilisers, and the proliferation of infrastructures such as dams, ports, and roads are just some of ways in which the novel sediments that would characterise the Anthropocene as a decisive break from all previous bodies of rock, thereby justifying the Anthropocene as a novel *unit* (Head, 2023; Waters et al., 2016). Yet the primary signal that the AWG are pursuing for their formalisation effort is the global spread of artificial radionuclides resulting from nuclear weapons testing beginning in the mid-twentieth century. Traces of this material are evident globally and can be dated with remarkably high precision using radiometric dating of isotopic half-lives that nuclear fallout leaves wherever it is deposits. In this way, the onset of nuclear weapons testing leaves a *global* and *synchronous* geological signal that will be evident for vast spans of time to come (Waters et al., 2015).

What to make of the insight that fossils constitute a material practice of experiencing and narrating relations of space and time? One option is to focus on the shared epistemological terrain between geology and law. ‘Forensics’ provides an appropriate frame with which to do so. The term ‘forensics’ is derived from the Latin word *forensic*, which refers to the *forum*, and thus to the practice and skill of making an argument before a professional, political, or legal gathering. Forensics indicates a common method of science and law. It entails a nurturing of

the capacity to elicit accounts from artefacts, *wherein the object is apprehended as a witness*. In law, the practice of acknowledging the agential capacities of artefacts dates back at least to Ancient Greece, where a special branch of the judiciary, known as the *prutaneion*, concerned themselves with adjudicating the culpability of objects. Miguel Tamen recounts an episode wherein a statue was tried for killing a man when it fell on top of him. “The statue was tried, convicted, and sentenced to be cast into the sea, though” (Tamen, 2004: 79–80). ‘In the *prutaneion*,’ corroborates Ilias Arnaotoglou, ‘the revenge for the dead person who was killed by an animal or by an inanimate object was taken at a symbolic level, by the punishment of the animal or object, as a form of retribution’ (Arnaoutoglou, 1993).

In a somewhat related register, Eyal Weizman and Thomas Keenan (2012) recount the conditions under which the skull of the Nazi phrenologist Mengele was brought to trial (a trial of a specific kind, as we shall see), toward attaining a form of retribution for victims of the atrocities he had been complicit in. Mossad agents were able to capture Eichmann in the Spring of 1960 at his refuge in Argentina. They knew that Mengele was in the country too, but fearing any activity that could jeopardise the success of the Eichmann operation, Mossad agents opted to return with Eichmann to Jerusalem and return at a later date to capture Mengele. In the interim, Mengele ‘went underground’, and in February 1979, suffered from a stroke and drowned while swimming near Bertioga, Brazil, where he was buried under the false name Wolfgang Gerhard. Nevertheless, a skull that was believed to be that of Mengele’s was eventually found when a body was exhumed in June of that same year, and Weizman and Keenan describe how a kind of retribution, or justice, was attained through the forensic process of identifying the skull as that of Mengele’s, in place of a trial of the man himself.

Weizman & Keenan proceed to recount the forensic investigations that took place to establish that the skull was *almost certainly* (absolute certainty being an impossibility) that of Mengele’s. As a result of this process, they argue, forensic anthropologists contributed a host of techniques to the armoury of human rights law, as well as international law, and of course criminal law, to say nothing of the various genres of television entertainment that precipitated therefrom. In doing so, the media of law, and as a consequence, the practice and understanding of law, changed as well. ‘The difference between a witness and a piece of evidence might seem to be that evidence is merely presented while a witness is interrogated,’ explain Weizman & Keenan. ‘However, the experience of forensic anthropology in the context of war crimes investigations seems to undo this distinction.’ (65). In the case of Mengele, scientific evidence comes to stand

in for a kind of justice. A kind of closure is presumed, allegedly facilitated by law, through the mobilisation of scientific, forensic methodologies. What forensics contributes in this instance is the truth of the skull as that of Mengele's. And that truth is presumed by law to be the truth of his culpability, the truth of his conviction, in the absence of a sentence. For in this instance, the question forensic techniques were invoked to answer was not: 'how did this person die?' but rather 'to whom do these bones belong?'

Extending the parallel between science and law, Weizman and Keenan assert that the recovery of Mengele's bones, and the investigation into the determination of the identity of those bones, 'opened up what can now be seen as a second narrative, not the story of the witness but that of the *thing* in the context of war crimes investigation and human rights. If the trial of Eichmann marks the beginning of the era of the witness, we would suggest that the exhumation of a body thought to be that of Mengele in June 1985 signals the inauguration of an era of forensics in human rights and international criminal justice' (Keenan & Weizman, 2011).<sup>2</sup> Using a turn of phrase that seems to designate simultaneously what is common and distinct between science and law, by way of the example of Eichmann's and Mengele's respective fates, Weizman & Keenan remark: 'one faced a legal forum; the other a scientific one' (Keenan & Weizman, 2012: 11).

### **Technofossils: the Anthropocene's speculative forensics**

In their effort to give form to a proposed Anthropocene thesis, members of the AWG seek to define a new class of artefact: not the fossil, but the technofossil. In doing so, AWG members perceive Earth's future material record in the present. The technofossil is perhaps the clearest example of the speculative-geology designated by the Anthropocene hypothesis, even if its normative dimensions have not been fully thematized. Technofossils are the material remnants of the technosphere. AWG members define the technosphere as 'the interlinked set of communication, transportation, bureaucratic and other systems that act to metabolize fossil fuels and other energy resources... considered to be an emerging global paradigm, with similarities to the lithosphere, atmosphere, hydrosphere, and biosphere.' (Haff, 2014: 301). Admittedly vague in definition, the technofossil nevertheless suits the purposes of the AWG in articulating a way of perceiving a geological future within the requirements of geological unit definition. 'Recent anthropogenic deposits contain new minerals and rock types,' explains AWG authored paper, 'with rapid global dissemination of novel materials including elemental aluminium, concrete and plastics, shaped into abundant rapidly-evolving 'technofossils''

(Waters et al., 2016). With the technofossil concept, geologists interested in formalizing an Anthropocene unit have sought to fashion a forensic medium that renders contemporary artefacts such as microplastics (Ivar do Sul & Labrenz, 2022), cement ('the most abundant novel rock type of the Anthropocene') (Waters & Zalasiewicz, 2017) and the remains of popular eating habits in the form of disposed chicken bones (Bennett et al., 2018) as objects of geological significance, experience, and indicators of time and process endured by the planet itself, which designate a stratigraphy particular to the Anthropocene: a technostratigraphy (Zalasiewicz et al., 2014).

The technofossil is generative of a novel aesthetic remarkably successful at facilitating a sensitivity to geological deep time (Zalasiewicz et al., 2021). As a narrative technique, the technofossil is an attempt to render planetary dynamics sensible in such a way as to emphasise material and strata set apart as 'novel', both temporally and categorically. The technosphere hypothesis amounts to a strategy by which the AWG expand the category of rock and fossil to include 'contemporary strata' (even though there is nothing 'contemporary' about technology), encapsulating both what is thought to be novel about the Anthropocene hypothesis, as well as the ways in which it is asserted as entirely consistent with the requirements of formal unit definition within the discipline of stratigraphy. The technofossil concept, in other words, does something peculiar, and slightly paradoxical. On the one hand, the technofossil suggests a distinction between deposits particular to the past century or so, and older deposits (which would still be *fossils* but *just* fossils, rather than *technofossils*). Yet on the other hand, and at the same time, the technofossil idea suggests a folding of the contemporary into the vastness of 4.5 billion years of geological *deep time*. Extending the meaning of 'fossil', technostratigraphy folds the wider themes surrounding Anthropocene discourse into geological practices of classification. Specifically, the 'technofossil' allows the AWG to speak of a very recent temporality *as geological*, through the familiar and procedurally acceptable idiom of the fossil. Simultaneity of conflicting temporalities, recalling Koselleck's particular development of the 'simultaneity of the non-simultaneous' (Koselleck, 2018), is characteristic of the aforementioned 'novel aesthetic' of geo-narrativity: time is not just the time of human history, it is what former AWG Chair Jan Zalasiewicz calls 'simply time' (Chakrabarty, 2018; Zalasiewicz, 2019). The human/non-human distinction is redundant in the context of the experience of duration.. To that extent, although the Anthropocene theme is problematic insofar as it conflates conflicting histories and subjectivities into the singular theme of 'anthropos'

(Yusoff, 2018; Haraway 2015), the material practices of geologists are nevertheless remarkably effective in displacing anthropocentric notions of time, or to put it differently, *replacing* historical experience within a wider context of planetary durational experience, whether that be the meandering of rivers or the retreat of glaciers over billion year time frames.

The crucial point is that forensic practices, such as those entailed in any reference to fossils, are normative. Forensics is, after all, a strategy of persuasion. It is a technique of speaking on behalf of entities, artefacts their experiences, and of rendering sensible the experience of planetary dynamics otherwise imperceptible within traditional historical timeframes. It extends the domain of the witness, whereby testimony becomes a competency that is no longer exclusive to the witness, but can be extended to objects, either directly or via the subject that speaks on its behalf. And as a consequence of the technofossil, not only the object itself, but also the manner of its comprehension is altered. ‘The making of facts,’ explain Weizman & Keenan, ‘depends on a delicate aesthetic balance, on new images made possible by new technologies, not only changing in front of our very eyes, but changing our very eyes – affecting the way we can see and comprehend things.’ (Keenan & Weizman, 2012: 27). It is in this sense that the technofossil constitutes a novel forensic aesthetics, to the extent that it alters the manner of the judgement and sensation.

The normative dimension of forensic practices arises from novel configurations of objects and observers. The advent of fossils inaugurated a distinct method for verifying knowledge. In the examples of Kircher and Steno, *verification* of knowledge proceeds as *construction* of knowledge. Reference to skeletal remains not only confirmed belief in scripture (perhaps uncomfortably so insofar as Steno then devoted himself exclusively to the clergy), but also inaugurated geological study, insofar as their techniques remain as cornerstones of geological practice. New technologies entail novel observations, arising from associations of, for example, skeletal remains with scriptural passages; or chicken bones with the Geological Time Scale. A normative dimension arises from the choices observers make concerning the interpretation and communication of those associations. ‘When we speak of an “Anthropocene,” we only seem to be sitting in a geoscientific seminar,’ remarks Peter Sloterdijk. ‘In reality, we are taking part in a court case – in a preliminary hearing before the main trial, to be more precise – in which, as a first step, the accused’s culpability is supposed to be settled’ (Sloterdijk, 2018: 2). In the era of a pending Anthropocene unit, geology’s speculative capacity is perhaps more properly an extension (or appropriation) of forensic capacities in the service of designating culpability.

The technofossil, in other words, facilitates not only the designation of recent time and sediments within the vernacular of stratigraphic practice; it also engenders a proxy *juridical* certainty, invoking *measurement*, for example of the frequency of certain skeletal remains in a rock section, as an instance of *normative assertion*.

The normative dimension of Anthropocene geology is, in part, a demonstration of the precision of geological practices of correlation and dating. In addition to traditional dating techniques facilitated by fossils, whereby geologists arrive at a *relative* classification of strata by observing similarities in the accumulation of skeletal remains in rocks from across the world, the advent of radiometric dating in the Twentieth Century allows *absolute* dating and correlation by measuring the decay of radioactive isotopes found in rocks and fossils. Consequently, geologists involved in the Anthropocene formalisation effort assert that they can *already* acknowledge the material consequences of Mid-Twentieth Century nuclear weapons detonation on sediments across Earth with remarkable precision; sufficient enough to qualify a novel geological unit despite the brevity of those changes (so far), by comparison with existing, and far older, units of the Geological Time Scale. Such precision in measurement underlies the normative assertion of an Anthropocene as an index of human-led modification to Earth's material constitution. That assertion is justified, it is argued, by reference to the material analysis of cores of rock, extracted from eight sites across the planet.

The advent of nuclear weapons testing in the Mid-Twentieth Century resulted in 'geologically-speaking, a virtually instantaneous global release' of radiometrically datable plutonium deposits. As evidence of the remarkable precision that radiometric dating of deposits provides, consider that AWG members claim that they can identify 'distinct, globally recognizable phases, such as the 1959 weapons testing moratorium, a fallout "pulse" in 1963 (resulting from an acceleration of testing in 1962), and a rapid decline following the Partial Nuclear Test Ban Treaty of 1963).' This overlapping of *historical account* and *geological dating* is characteristic of the narrative that the AWG develop in their efforts to realise a formal Anthropocene geological unit. The significance of the technofossil concept, and the geological modes of observation particular to the AWG, lies in the justifiability of such conflated narratives, providing a node wherein "modern" history translates into geological "fact." The AWG are careful, however, to negotiate the way in which such acts of translation are read. 'The use of the signature of weapons of mass destruction to mark the beginning of the Anthropocene may be considered by some to be morally controversial or undesirable,' note the authors of an article

on the use of radiometric dating of radioactive fallout as a marker of an Anthropocene unit. '[B]ut such a designation would be valid in stratigraphic terms and should not be regarded as commemorating or celebrating the use of atomic weapons.' History becomes geological fact, but only on the condition of a reassurance of disinterest and impartiality. An Anthropocene unit marked by the onset of nuclear weapons testing would be, they argue, simply 'an appropriate marker, given that it marks the point at which humans not only began to steer the functioning of the Earth system itself, but also realized the capability to destroy our own civilization on a global scale.' (Cundy et al., 2023) The effort to cast a historical account of the Twentieth Century, replete with questionable assertions of 'humanity' and a 'civilization' that is 'our own', is less convincingly cast as geological fact. AWG-authored articles that reflect explicitly on the consequences of such translation practices are rare precisely for that reason. Nevertheless, the very fact that opportunities for such comparison have arisen in the first place demonstrates the peculiar consequences of a technofossil aesthetics, wherein geologists, who have otherwise restricted themselves to the deepest archives of planetary pre-history, find themselves in a position of having to navigate the socio-technical and military legacies of the Second World War and Cold War.

Of course, the Anthropocene, nor any of the assertions made by the AWG, are, as of yet, *geological fact*. By this is meant that the Anthropocene is not yet a unit of the Geologic Time Scale, and as such remains an informal designation (Swindles et al., 2023; Koster et al., 2023; Merritts et al., 2023; Gibbard et al., 2021). Their status as such is pending the deliberation of three tiers of committees that will review the AWG's proposal once submitted (Damianos 2022). Their deliberation entails an assessment of whether an Anthropocene unit, as defined by the AWG, would be consistent with the existing assembly of unit types that currently constitute the Geologic Time Scale; as well as what kind of *precedent* an Anthropocene unit would set for further amendments to the Scale. Each level of the three committees must agree on the amendment by way of a supermajority vote of at least 60%. The significance of that deliberative process cannot be understated, insofar as an Anthropocene unit would mark a radical shift in the temporalities and types of signals that can be acceptably folded into Earth's geo-historical and stratigraphic narration.

In other words, and to conclude, what the AWG's formalisation efforts demonstrate most forcefully, is the extent to which the material constitution of the planet is not so much *read* from the rocks, as it is *written*. And to that extent, the process reveals how *rock* and *strata* are

not simply media to be *decoded*, but are rather a medium with which to *encode* or *write* that history. Technofossils, technostratigraphy, and radiometric dating of nuclear fallout, may (or may not) be convincing techniques for narrating an Anthropocene unit, yet their success is ultimately contingent on the willingness of the voting panels to incorporate that narrative into their own accounts of Earth's material and historical composition. At the time of writing, the AWG have relayed their intention to submit a formal proposal to the voting committees by December 2023. Submission would conclude a process that has taken almost fifteen years, having begun in 2009. What the fossils say, or rather, the capacity of geologists to solicit testimony from fossils, is only as successful as the willingness of colleagues to adopt those accounts themselves.

### **Endnotes**

<sup>1</sup> The term 'Anthropocene' was first proposed by Paul Crutzen, an atmospheric chemist who received the Nobel Prize for demonstrating the effects of aerosols on the atmosphere. See Crutzen & Stoermer, 2000; Crutzen, 2002.

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