Can we envision a greentopia in the Anthropocene?

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The aim of this paper is answering the following question posed in its title. The central idea I promote is that these two rich and evocative notions are semantically conflictual, and that the Anthropocene poses fundamental constraints to our way of thinking a greentopia. This contrast is exemplified by a dispute occurred in 2014 over the idea of a 'good Anthropocene'. Discerning the contradictions of thinking a 'good Anthropocene', however, should not resolve in nihilism or nature-as-usual responses. On the contrary, it should prompt the necessity of a meticulous investigation at the intersection of science and humanities—that is, understanding the current state of affairs, and what can be done to change if for the better.

I will start by briefly introducing the concept of Anthropocene. Although I do believe most of you are aware of what the word refers to, its various and occasionally divergent use require me to provide a base definition and meaning, which I ground in the Anthropocene's scientific research.

I will then move to the 'good Anthropocene' dispute, attempting to identify the key theoretical issues emerging from the debate. I then attempt to implement the findings in the subsequent, and most theoretically rich section of my paper, namely defining 'greentopia.' After sketching a definition of greentopia, I will reach the conclusions by answering whether we can or cannot envision a greentopia in the Anthropocene.

The Anthropocene

The Anthropocene is a proposed geological epoch with disputed starting dates promoted by the Anthropocene Working Group, a multidisciplinary research programme established in 2009. The concept encompasses a series of conditions and events that *Homo sapiens* has triggered,

such as a sixth major extinction event, global warming, extensive land conversion to agriculture, disruption of biogeochemical cycles, and so forth. In the current decade, the word 'Anthropocene' has seen a surge in multidisciplinary interest, especially among disciplines close to the Earth system science, geology, and environmental humanities.

Long story short, the concept of Anthropocene was popularized by Nobelist Paul Crutzen during the IGBP Science Committee meeting in Cuernavaca, Mexico, in February 2000. He reportedly coined the term 'Anthropocene' after a speaker kept using 'Holocene' to address our current geological Epoch. Feeling the need to stress the magnitude of the human footprint on the Earth, Crutzen stood up, exclaiming that we do not live in the Holocene any longer, but rather in a new, human-induced epoch—the Anthropocene.

In the same year in May, he published together with the marine biologist Eugene Stoermer the famous *IGBP Global Change Newsletter* article titled 'The 'Anthropocene' (Crutzen & Stoermer, 2000).' The authors recognized humans as a new geo-morphological force, and suggest using the term 'Anthropocene' to stress the scale and magnitude of human activities. The word initially drew the attention of scientists from Earth system science, oceanography, marine science, biology, and geology, and of important epistemic communities such as the IGBP (International Geosphere-Biosphere Programme). They implemented the concept sporadically, oftentimes informally, with diversified, science-based definitions. In 2003, the word 'Anthropocene' first appeared on *Nature,* signalling an increasing interest in the broader scientific community (Nature, 2003). Later, humanists and social scientists slowly began debating on the historical, ethical, and socio-cultural aspects of the Anthropocene (Grinevald, 2006; Dalby, 2007; Robin & Steffen, 2007; Dunlap, 2008). In 2009, Dipesh Chakrabarty published his influential paper "The Climate of History: Four Theses," which set a critique of the notion that sparked a wide range of debates among human and social sciences (Chakrabarty, 2009).

A turning point in the epistemological development of the concept of Anthropocene was the establishment in 2009 of an Anthropocene Working Group. The research program was established as part of the Subcommission of Quaternary Stratigraphy, a constituent body of the International Commission on Stratigraphy. The Anthropocene became more than an informal designation: it became a scientific hypothesis. With the establishment of an Anthropocene Working Group, it begun today's most compelling quest in the Anthropocene scientific arena, namely formalizing the proposed epoch within the Geological Time Scale. Immediately after, the concept of Anthropocene saw a surge in multidisciplinary interest witnessed by the amount of related publications produced, and media coverage received. As

reported by Davor Vidas, Anthropocene Working Group member, they keyword 'Anthropocene' would provide roughly four-hundred results on Google in 2006—against more than four million today, featuring a movie, and a song.

Fast forward to March 2019, the Anthropocene Working Group publishes *The Anthropocene as a Geological Time Unit* (Zalasiewicz & al., 2019). It represents the most comprehensive work documenting the science of the Anthropocene, providing the ontological characterization of the Anthropocene as an ongoing state of affairs. In May, the AWG votes in favour of formalizing the notion through locating a stratigraphic marker (known in chronostratigraphy as GSSP or 'golden spike') to set its formal beginning, while locating it approximately to the mid-twentieth century of the Common Era.

Meanwhile, the Anthropocene has exploded, becoming an umbrella term framing many of the present human-environment discussions. Responsibility, stewardship, geopolitics, history, arts, philosophy, are just a glimpse of what you can find under the designation 'in the Anthropocene'—a fact that occasionally arouses mockery about the term (Kohn, 2014; Harrison, 2015; Lewis & Maslin, 2015; Lövbrand & al., 2015; Moore, 2015; Biermann & al., 2016; Chakrabarty, 2016; Ellis, 2016; Clive Hamilton, 2016; Heikkurinen & al., 2016; Castree, 2017; Malhi, 2017; Bauer & Ellis, 2018; Steffen & al., 2018)

Among the vast landscape of Anthropocene topics and discussions, one particularly drew my attention for the purpose of this paper. It is a dispute occurred in 2014 over the idea of a 'good Anthropocene', which is exquisitely recounted in a 2016 article from Simon Dalby called "Framing the Anthropocene: The good, the bad and the ugly." (Dalby, 2016) I believe this dispute partially answers the original question of this paper, namely whether we can envision a greentopia in the Anthropocene.

The 'Good Anthropocene' dispute

As reported by Dalby, the idea of a good Anthropocene seems to have first appeared in an article named 'The Planet of No Return: Human Resilience on an Artificial Earth.' The article was published in *The Breakthrough Journal* in 2011 by the environmental scientist and Anthropocene Working Group member Erle Ellis (Ellis, 2011). The author criticizes the idea of delineating 'a safe operating space for humanity' through setting 'planetary boundaries.' This is a critique to a framework promoted in 2009 by a multidisciplinary team of authors led by Johan Rockström, whose aim is identifying thresholds in the Earth processes that would cause adverse and undesirable changes in the Earth system (Rockström & al., 2009).

Rejecting a framework based on natural constraints, Ellis suggests instead to focus on variation in human system boundaries—such as the transition from hunter-gatherer to agriculture. These boundaries, rather than biophysical ones, represented the main constraint for human development in the Holocene, and we should expect the same dynamic reoccurring in the Anthropocene. The main feature defining human system boundaries, as repeatedly stressed by Ellis, is resilience—the capacity of humans to adapt and endure adverse circumstances. In the Anthropocene, such resilience is expressed through technological advancement, especially in ecosystem engineering. Given the techno-driven resilience of modern humans, we should embrace the "opportunity to create a planet that is better for both its human and nonhuman inhabitants." Therefore, "a good, or at least a better, Anthropocene is within our grasp." (Ellis, 2011) Better for whom precisely, Ellis does not specify.

Besides criticism of various nature, the author answers positively to the question whether we can envision a good Anthropocene. This question is not equal to the central question of my paper, for a good Anthropocene does not necessarily coincides with a greentopia. However, an element of 'good' suggests, to the very least, a trajectory, which the author finds explicitly in technological advancement. What degree of technology should thus a greentopia entail? I will come back to this point late in the paper.

The actual dispute over the 'good Anthropocene' ignited after the American science and environmental journalist Andrew Revkin held a paper at the annual meeting of the Association for Environmental Studies and Sciences (AESS), hosted in June 2014 by the Pace University in New York City (Revkin, 2014b, 2014c). The paper (available on YouTube) goes by the title 'Paths to a 'Good' Anthropocene.' In a rather informal tone, Revkin suggests the possibility of engaging with amazement, rather than melancholy and anguish, to our present times. Such 'positive' attitude contraposes to what he sees to be the two major themes of the environmental movement, namely "woe is me, shame on you." His optimism is derived from a set of 'existential' traits that he believes "can amplify our potential to have a Good Anthropocene", and a strategy for a "sustainable human progress." These are bend, stretch, reach, teach, reveal, reflect, rejoice, and repeat. Revkin articulates these traits as an engine for positive individual and social change, stressing multiple time the importance of social qualities over numerical outcomes in achieving a good Anthropocene. Overall, a good Anthropocene seems feasible if we simply start looking at things in a positive, qualitative-oriented way.

It did not take long before criticism was upon Revkin for his overly optimistic characterization of the Anthropocene. Only six days after the AESS conference, Clive Hamilton, an Australian public intellectual and professor in Public Ethics, posted a letter

addressing Revkin's talk on his personal blog. He bluntly called the idea of 'good Anthropocene' a delusion, labelling those advocating for it "unscientific" and "living in a fantasy world of their own construction." In short, a 'good Anthropocene' is delusional thinking (C. Hamilton, 2014a).

Hamilton's argument follows from the premises that scientific evidence on the impact of anthropogenic activities is incontrovertible in foretelling grim scenarios for most of the Earth's inhabitants. Things are bad, to the point that we can only strive for making things less bad, rather than better. Creating optimistic narratives, Hamilton argues, merely dodges, reframes, and ultimately de-problematizes the Anthropocene. Positive thinking is but an illusion that undermines the magnitude and gravity of what the Anthropocene represents. Henceforth, a 'good Anthropocene' seems to be nonsense, if not an oxymoron—for the term 'Anthropocene' itself already asserts a state of affairs that is far from being good.

Revkin answered back promptly by posting a revised version of his short email correspondence with Hamilton on *Dot Earth*, his blog for *The New York Times*. His first claim is that Hamilton simply misses the core argument of his talk—that is, "the need for a shift in goals from numerical outcomes to societal qualities." (Revkin, 2014a) Then, Revkin argues his beliefs (more than his talk) to be in line with some of Hamilton's points, namely the importance of understanding the impact of climate change on the poorest; and the criticism on technocentric approaches (such as geoengineering). He then ceases to venture forth into a discussion with his counterpart, trusting that "while Hamilton and those who championed his view on Twitter clearly dislike the notion of a "good" Anthropocene, that doesn't mean they're hoping for a "bad" one."

Climate and communication expert Joe Romm intervened with a very short blog entry on *ThinkProgress,* a former American news blog. Based on work presented in his 2012 book *Language Intelligence*, Romm warns on the usage of the adjective in both ways—there is neither 'good' nor 'bad' Anthropocene. However, the Anthropocene (a word of which its usefulness Romm is critical about) has implicit connotations that steers away from anything that is or can potentially be identified as 'good.' (Romm, 2014; Dalby, 2016) Hence, a 'good Anthropocene' is ultimately contradictory, whereas a 'bad Anthropocene' is simply redundant.

The dispute between Revkin and Hamilton quickly settled. The dispute between 'bad' or 'good Anthropocene' did not. Hamilton critique unveiled the deeper roots of the idea of a 'good Anthropocene,' which he finds in the movement called 'eco-pragmatism.' In an article for *Scientific American* published in June 19, 2014, Hamilton attacked this "new breed of ecopragmatists" for the politically dangerous claims they perpetuate by welcoming the

Anthropocene "as an opportunity."(C. Hamilton, 2014b) According to Hamilton, implicitly claiming the Anthropocene to be system-compatible by envisioning an optimistic techno-utopia is not just a "fundamental misreading of science," but also "music to the ears of political conservatives." No structural change would be required, in that technology and human resilience would provide the answer to the challenges posed by the Anthropocene.

Eco-pragmatism, the critique to technology, or utopian and dystopian futures of humankind are themes beyond the scope of this paper. To avoid going down the rabbit hole, let's analyse what can be extrapolated from this very brief dispute to assemble a definition of greentopia.

On the one hand, Revkin and the eco-pragmatic school of thinking do acknowledge the Anthropocene as a challenging time *in* and *for* the history humans and the Earth. However, they hold forth to the possibility of a prosperous future for humanity by means of science and technology. On the other hand, Hamilton, and those sharing his views, argue that science and technology will not provide any panacea if deeper, structural changes in co-existing with the Earth are not accomplished soon. Envisioning a 'good Anthropocene' is thus wishful-thinking, contradictory, and possibly dangerous.

How can we thus envision a greentopia in the Anthropocene? Or rather, can we envision a greentopia at all? If a 'good Anthropocene' is nothing but delusional thinking, and the ideas of 'good Anthropocene' and greentopia are far-fetched, then a greentopia seems eventually unattainable. However, elaborating on a definition of greentopia might be useful before reaching this conclusion.

Hence, I tried to think of an open set of principles that would be useful for imagining a greentopia. This sort of pondering is not merely a mental exercise, but rather a mental experiment (a *Gedankenexperiment*) from which deducing useful guidelines in thinking and discussing the human-environment relationship. Drawing on the 'good Anthropocene' dispute, here is a blueprint of the principles I came up with.

First, *a greentopia should be fundamentally pleasing for everyone*. A greentopia should not be a mere struggle for survival, and should follow egalitarian principles. It is hard to imagine any utopia where individuals struggle for their own life, or social classes fight each other. Every member of the greentopian community should benefit and contribute to the overall wellbeing and 'greenness' of the society. How would such wellbeing and 'greenness' be achieved? This is a difficult question, especially in terms of understanding the radically political role of today's technology in improving human life conditions at the expenses of the environment (as well as other humans). Would a greentopia be built by means of technology,

as ecopragmatists would claim, or based on a liberation from its shackles? What kind of technology should be implemented to create and maintain a greentopian society? What political and social powers would take and implement these decisions? I leave these questions open.

Second, *a greentopia should merge human habitats with natural environments*. The division between increasingly populated and industrialized urban settlements and natural environment is a recurrent theme in the Western post-industrial literature. At least from the end of the 19th century, authors and movements in urban design and planning, from the ideal *Garden City* of Ebenezer Howard and *The Radiant City* of Le Corbusier, to Ernst Callenbach's *Ecotopia*, and the New Urbanism, Green Urbanism, and Ecological Urbanism movements, have envisioned cities both sustainable and integrated with the environment. Such unification would introduce novel social values, grounding a shift from *'caring about the environment'* to *'caring about the city-environment.'* (Emblematic of this unification is how the Ecuadorian Amazon have been granted legal rights, or how Iceland commemorated the loss of a glacier with a plaque).

Third, *there should not be a single, globally homogenous Greentopia*. This is a principle helping both preventing forms of colonial greentopias, and assessing the scale of a greentopia. Should there be one global greentopia, or multiple coexisting ones? I argue to be unpractical, if not undesirable, to contemplate a globally homogenous greentopia. However, delimiting a greentopia to a community, a village, a city, or a country, should not disregard contextualizing *how* these would exist. It is inconvenient imagining a greentopia existing at the expenses of other environments and human societies—as it is already the case today. Multiple, culture-specific greentopias seem a more reasonable option than a global greentopia. In addition, a greentopia should also be *multispecies*, as it is implicit in the prefix 'Green' itself.

Fourth, *a greentopia should last in time indefinitely.* Is it useful to envision a greentopia lasting for an hour, a day, a month, or a year? The closest adjective grasping the sufficient timescale for a greentopia to be recognized as such is arguably 'sustainable.' The textbook definition of 'sustainability' is meeting the present needs without compromising the ability of future generations to meet their own needs. Even better, Wikipedia defines 'sustainability' as simply 'the ability to exist constantly.' Likewise, within the idea of greentopia there is an implicit hope that any such utopia will last for indefinite time. This principle is paramount, in that it also poses the question on *how* to achieve a greentopia that should last in time. If, to be such, a greentopia should exist indefinitely, then how to *achieve* and *maintain* it are crucial theoretical points for its ontological characterization.

Fifth, *a greentopia should be a communal endeavour*. Although cases of individuals isolating themselves from human communities are largely documented, it is difficult to envision a greentopia made of atomic individuals. If it is true that humans are by nature social animals then a greentopia is necessarily the outcome of collective efforts.

Whereas these principles concern the ontological characterization of a greentopia, an additional three meta-principles help in defining the *concept* of greentopia.

First, *the concept of 'greentopia' serves as a limit*. It is reasonable to believe that someone in the history of humanity felt he or she was living in what he or she would define as a greentopia. Hence, the possibility that a greentopia existed, or that will be realized in the future, cannot be utterly excluded. Such reasoning, however, does not really help in providing guidelines for thinking a greentopia in the Anthropocene. The principles constituting the concept of 'greentopia' that I delineated aim at charting paths to envision a greentopia in the Anthropocene. As the 'good Anthropocene' dispute illustrated, this seems a contradiction in terms. Therefore, the concept of greentopia should function as a limit, toward which our thinking a green society should tend to.

Second, *the concept of 'greentopia' is socio-culturally specific*. This principle of relativism states that the very categories defining a greentopia are already part of a determined socio-cultural context. In plain words, my idea of greentopia might be entirely different from yours, and just as rightfully justified. This is a very problematic point, in that challenges the idea of a 'realist greentopia'—namely an objective state of affairs existing independently from us. Strictly philosophically, this principle also raises the issue of being able to discern a greentopia. How can I be sure I am not already living in a greentopia, given that I might not be able to recognize it, due to flawed or lack knowledge? I will leave this question open as well.

Third, *all these principles apply to a human greentopia*. As we are witnessing a sixth major extinction event in life's history, one driven by humans, perhaps the best possible greentopia for millions of non-human species is one without *Homo sapiens*. The principles drawn above are fundamentally anthropocentric, although some may still apply to other species as well. They define what *human greentopias* should resemble.

These principles are generally consistent with each other. For example, a greentopia that would last indefinitely in time necessitates of communal efforts, both in building and preserving a greentopia. It also seems an oxymoron to envision a global, all-pleasing greentopia that does not account for differences in cultural perception of the environment, nor for non-human species.

However, drawing on these principles raises other questions, such as defining what makes a society 'fundamentally pleasing,' what merging human societies and natural environment means (given that we are always already *in* nature) or how to cope with the possibility of greentopias with conflicting interests, if the principle of relativism applies. Once again, I must leave these questions open, perhaps for a second-round conference.

Now that both the Anthropocene and greentopia have been defined, it is time to finally answer whether or not we can envision a greentopia in the Anthropocene.

A few weeks after the dispute over the 'good Anthropocene,' the journalist Nathanael Johnson arranged a Skype debate between Andrew Revkin and Clive Hamilton, feeling that some key points of the dispute were not settled. The transcript was published on *Grist* on July 7, 2014. Among the questions asked, Johnson made an interesting remark: "It seems to me that perhaps the real difference of opinion here is about how to talk about this: Do we point to the positive, or point to the negative? Is it more effective to show people what's possible, or show people what's horrible?"(Johnson, 2014) His question raises a crucial point, which is also an object of sociological study known as environmental framing theory. The ´good Anthropocene´ dispute seems to verge to the issue on how to communicate (within and outside academia) the Anthropocene. What is the best narrative to portray to foster civil responsibility toward the environment? As epistemology teaches us, for an argument to be true, it also needs to be properly justified. Are eco-pragmatists justified enough in advocating for the use of technology to achieve a ´good Anthropocene´? If we assume that technological advancement will ultimately save us, is the very act of telling so beneficial? Technological and science-based responses to the ´climate crisis´ are undoubtedly playing a crucial role in framing issues and providing solutions. However, this is no excuse for stepping out the debate arena. Assuming that what fixed yesterday´s problems will fix tomorrow´s as well, is an obvious logical fallacy. Citizens of a greentopia should always bear this principle in mind.

Finally**,** is it possible to envision a greentopia in the Anthropocene? I believe it to be very unlikely. If science is accurate, the cumulative direct and indirect effects of human actions have left no place untouched. The increasing global mean temperature, the change in climate patterns, the levels of carbon dioxide parts-per-million, and so forth, have become the new invisible hand pulling the strings of the Earth natural processes. The socio-economical facets of the Anthropocene do not seem to foreshadow a ´good Anthropocene´ either. Perhaps, a greentopia will be possible long *after* the Anthropocene, and even then, geologists are telling us that the human imprint on the Earth will last thousands, if not millions of years in the future.

Acknowledging such state of affairs does not mean that aspiring and work hard to get as close to a greentopia as possible is futile efforts, or that envisioning possibilities is mere delusional thinking. The hard task is framing these possibilities on the thin line dividing 'unscientific' pipe dreams or techno-utopias, and doom-like scenarios. In the end, I believe this to be core task of the new-born field of environmental humanities, and environmental philosophy. Therefore, one extra principle should be added for effectively thinking a greentopia: there cannot be a greentopia without philosophy.

Bibliography

Bauer, A. M., & Ellis, E. C. (2018). The Anthropocene Divide: Obscuring Understanding of Social-Environmental Change. *Current Anthropology, 59*(2), 209-227. doi:10.1086/697198

Biermann, F., Bai, X., Bondre, N., Broadgate, W., Arthur Chen, C.-T., Dube, O. P., . . . Seto, K. C. (2016). Down to Earth: Contextualizing the Anthropocene. *Global Environmental Change, 39*, 341-350. doi:10.1016/j.gloenvcha.2015.11.004

Castree, N. (2017). Anthropocene: social science miscontrued. *Nature, 541*, 289.

Chakrabarty, D. (2009). The Climate of History: Four Theses. *The University of Chicago Press. Journals. Critical Inquiry, 35*(2), 197-222.

Chakrabarty, D. (2016). Humanities in the Anthropocene. *New Literary History, 47*, 377–397.

Crutzen, P. J., & Stoermer, E. (2000, May 2000). The "Anthropocene". *IGBP Global Change Newsletter,* 17-18.

Dalby, S. (2007). Anthropocene Geopolitics: Globalisation, Empire, Environment and Critique. *Geography Compass, 1*(1), 103-118. doi:10.1111/j.1749-8198.2007.00007.x

Dalby, S. (2016). Framing the Anthropocene: The good, the bad and the ugly. *The Anthropocene Review, 3*(1), 33-51. doi:10.1177/2053019615618681

Dunlap, R. E. (2008). Promoting a Paradigm Change. *Organization & Environment, 21*(4), 478-487. doi:10.1177/1086026608328872

Ellis, E. C. (2011). The Planet of No Return: Human Resilience on an Artifical Earth. *Breakthrough Journal, 2*.

Ellis, E. C. (2016). Involve social scientists in defining the Anthropocene. *Nature, 540*, 192-193.

Grinevald, J. (2006). La révolution industrielle à l'échelle de l'histoire humaine de la biosphère. *Revue européenne des sciences sociales*(XLIV-134), 139-167. doi:10.4000/ress.293

Hamilton, C. (2014a). The Delusion of the "Good Anthropocene": Reply to Andrew Revkin.

Hamilton, C. (2014b). The New Environmentalism Will Lead Us to Disaster - Scientific American.

Hamilton, C. (2016). The Anthropocene as rupture. *The Anthropocene Review, 3*(2), 93-106. doi:10.1177/2053019616634741

Harrison, R. (2015). Beyond "Natural" and "Cultural" Heritage: Toward an Ontological Politics of Heritage in the Age of Anthropocene. *Heritage & Society, 8*(1), 24-42. doi:10.1179/2159032x15z.00000000036

Heikkurinen, P., Rinkinen, J., Järvensivu, T., Wilén, K., & Ruuska, T. (2016). Organising in the Anthropocene: an ontological outline for ecocentric theorising. *Journal of Cleaner Production, 113*, 705-714. doi:10.1016/j.jclepro.2015.12.016

Johnson, N. (2014). Is the Anthropocene a world of hope or a world of hurt?

Kohn, E. (2014). Toward an ethical practice in the Anthropocene. *HAU: Journal of Ethnographic Theory, 4*(1), 459-464. doi:10.14318/hau4.1.028

Lewis, S. L., & Maslin, M. A. (2015). A transparent framework for defining the Anthropocene Epoch. *The Anthropocene Review, 2*(2), 128-146. doi:10.1177/2053019615588792

Lövbrand, E., Beck, S., Chilvers, J., Forsyth, T., Hedrén, J., Hulme, M., . . . Vasileiadou, E. (2015). Who speaks for the future of Earth? How critical social science can extend the conversation on the Anthropocene. *Global Environmental Change, 32*, 211-218. doi:10.1016/j.gloenvcha.2015.03.012

Malhi, Y. (2017). The Concept of the Anthropocene. *Annual Review of Environment and Resources, 42*(1), 77-104. doi:10.1146/annurev-environ-102016-060854

Moore, A. (2015). Anthropocene anthropology: reconcetpualizing contemporary global change. *Journal of the Royal Anthropological Institute, 22*(1).

Nature. (2003). Welcome to the Anthropocene. *Nature, 424*(6950), 709. doi:10.1038/424709b

Revkin, A. (2014a). A Darker View of the Age of Us – the Anthropocene.

Revkin, A. (2014b). Exploring Academia's Role in Charting Paths to a 'Good' Anthropocene.

Revkin, A. (Producer). (2014c, September 19, 2019). Paths to a 'Good' Anthropocene. *AESS 2014 Conference in NYC*.

Robin, L., & Steffen, W. (2007). History for the Anthropocene. *History Compass, 5*(5), 1694-1719. doi:10.1111/j.1478-0542.2007.00459.x

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F. S., Lambin, E. F., . . . Foley, J. A. (2009). Planetary Boounidaries: Exploring the safe operating space for humanity. *Ecology and Society, 14*(2).

Romm, J. (2014). Words Matter When Talking Global Warming: The 'Good Anthropocene' Debate.

Steffen, W., Rockstrom, J., Richardson, K., Lenton, T. M., Folke, C., Liverman, D., . . . Schellnhuber, H. J. (2018). Trajectories of the Earth System in the Anthropocene. *Proc Natl Acad Sci U S A, 115*(33), 8252-8259. doi:10.1073/pnas.1810141115

Zalasiewicz, J., Waters, C., Williams, M., & Summerhayes, C. (2019). *The Anthropocene as a Geological Time Unit*. Cambridge, United Kingdom: Cambridge University Press.