AN ETHICAL INVESTIGATION OF THE ANTHROPOCENE: AN AFRICAN PERSPECTIVE

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Abstract

The Anthropocene is a geological epoch characterized by human-induced disruption and its corresponding adverse effect on the ecosystem. Human activities have exerted disruptive effects on the environment resulting in imminent global challenges ranging from climate change to deforestation, and these pose a threat to human habitation. There is an obvious correlation between environmental degradation and human habitation. In Africa, it has become problematic to articulate the nature of ethics that ought to guide the human-nature relationship which is founded on indigenous environmental orientation. Some researchers have seriously argued that Africa is ontologically anthropocentric, given the idea of human persons being the center of reality. The research employs the method of hermeneutics to examine the environmental orientation of the African people and argues for suitable environmental ethics that can address the recent environmental challenges and ensure sustainability. The research adopts the concept of Ubuntu to argue for the extension of the principles of Ubuntu to the environment because the health of the environment is invariably the health of humans.

The Concept of Anthropocene

The history of interactions between humans and their environments dates back to well before the advent of completely modern humans, to the times of their ancient predecessors. Humans and their ancestors have been around for a few million years and altered their environment in a variety of ways, but always through modification of natural ecosystems to get an advantage in gathering vegetative food sources they needed or aided in the hunt for the animals they hunted. Their knowledge was most likely learned by observation and trial-and-

error, gradually growing increasingly effective at gently altering their environment but never entirely transforming the environments that surround them they couldn't possibly change the chemistry or the global makeup of the atmosphere or oceans; that extraordinary development would have to wait till the Industrial Revolution.

The realities of this century reveal how the nature of human activities on planet Earth has attained an all-encompassing level to the point that such activities have left an indelible mark on the geological timescale. In the bid to place a nomenclature to this reality, the term 'Anthropocene' was introduced to refer to the current period in which human impact is almost as important as natural processes. "Anthropocene"—from *anthropo,* for "man," and *cene*, for "new"—because human-kind has caused mass extinctions of plant and animal species, polluted the oceans and altered the atmosphere, among other lasting impacts.[1] It is accepted generally that the human species has exerted a significant impact on the Earth systems and its inhabitants with a lasting and potentially irreversible influence on the Earth systems and biodiversity. The Earth is approximately 4.5 billion years old, and modern humans have been around for approximately 200,000 years, yet in that time, humans have fundamentally altered the physical, chemical and biological systems of the planet on which we and all other organisms depend.[2]

The Ethical Implications of the Anthropocene Epoch

The Anthropocene epoch raises significant ethical questions and challenges the fundamental assumptions of modern thought such as; the dualism of human and nature; culture and nurture; subject and object binary; the conception of human agency, and the presumptions of ethical norms, such as liberty. The Anthropocene challenges the traditional division of ethical theories and the traditional environmental ethical theories.

The new era of the human age presupposes a radical shift in human relationships with the natural world and other nonhuman species; placing the human specie as the dominant force in the ecosystems. Writing on the magnitude of the challenges in the Anthropocene and the lack of preparedness to face these challenges, Hamilton quite noted that "there has been no biological adaption and no cultural learning or transmission to prepare us for the kind of environmental/geological changes that loom"[3] Thus, it is obvious that conventional ethics, for instance, deontology; seeking universal maxims for right action, or consequentialism; making

calculations of human welfare cannot be applied in a new era that demands new conceptual foundations for achieving human dignity. Thus, Hamilton notes:

> "It is not enough to describe as unethical' human actions that are causing the sixth mass extinction of species in the 3.7 billion-year of life on the planet… Talk of ethics renders banal a transition that belongs to deep time, one that is literally Earth-shattering. In depth time, there are no ethics"[4]

The existing ethical theories that legitimate the appropriation of the land and labor of "others" through economic systems that render massive harms to humans and non-humans banal are part of the problem. However, there are several reasons not to reject conventional ethics altogether, and dismiss all forms of "cultural learning or transmissions" based on the implications of new geological periods. Rejection of the cultural modes of learning and knowledge transmission would be deriding those cultural modes that do not share the modern divide of society from nature.

The Anthropocene challenges the temporal and spatial horizons of ethical action, especially the habits of short-term thinking by a variety of actors. As such, ethics in the Anthropocene must acknowledge and grapple with how individuals and organizations conceive of and take action concerning, long-term environmental challenges and problems like climate change. At the same time, technologies for visualizing and modeling the Earth system across time and space—both in historical reconstructions and future projections—not only provide new insights regarding human actions, but they also shape the way we understand human-Earth relationships.[5] However, anthropological studies also reveal that many cultural groups have robust conceptions of, and responsibilities to, both the past and the future that are not premised on western science but the ontologies of their own cultures.

Ethical Concerns in the Anthropocene

Moral Responsibility:

The establishment of a new epoch in Earth's history, the Anthropocene, has been brought about—or at least hastened and intensified—by a relatively small subset of humans claiming a vastly disproportionate share of the Earth's resources.[6] This raises pressing questions regarding who comprises this subset, what they owe to others, and how the material and institutional inequalities within and between nations should be addressed. Placing humans as one geological agent among many has challenged human exceptionalism—the claim that

humans alone are subjects, and the rest of nature merely objects.[9] And this has raised novel problems to moral responsibility. On the one hand, simply being able to have effects on others is not sufficient to establish moral responsibility. On the other hand, it is exceedingly difficult to establish responsibility for small, cumulative, and seemingly inconsequential actions by both individuals and communities that, when taken together, cause massive irreversible harm.[7]

Ashford E. has argued that even if individual actions are only harmful in their cumulative effect, or if those actions simply magnify the harm, individuals are still responsible for them.[8] By contrast, others argue we must understand what is reasonable to expect people to understand concerning how their actions may affect others.[9] With respect to the latter, the Anthropocene poses new problems about living on a full planet in which individual actions can affect others through non-linear relationships.

Environmental Justice

Considerations of distributive justice cannot be separated from the past that produced them. Considerations of fairness have a second distributive component because the ecological relationships presently available for maintaining life's flourishing are constrained by the impacts of a dominant group—the one that has hastened our entry into the Anthropocene. Consequently, the starting place for ethics has not been cooperatively produced nor does it reflect an agreement from an ideal community as political liberalism may hold. Rather, the current milieu reflects the deeply unequal conditions that made contemporary capitalism, and liberal societies founded on it, possible: slavery, colonial rule, post-colonial imperialism, at times brutal state planning, and claims to sovereignty over an evolutionary store of social and ecological goods.[10] On the other hand, there have been real gains in terms of human rights, quality of life, and many other dimensions of human life as a result of the Western project of the last two centuries worth preserving. As Chakrabarty has argued, however, there is a clear methodological rift between how scientific accounts of the planet fit with global histories of human societies, such as those of capitalism.[11] These kinds of rifts do not relieve moral burdens. Rather, they create new kinds of ethical concerns that arise in the very telling of planetary histories of the earth or global narratives of human history.

Moral value in the Anthropocene:

There is a narrative on the conception of the Anthropocene and the categorization of the concept into good and bad Anthropocene. Indeed, there is already a contest between self-styled eco-modernists, who advocate for notions of a "good Anthropocene," and those who identify the Anthropocene in terms of crisis.[12] According to the proponents of good Anthropocene, the advancement of science and technology has created a better reality for the human beings and as such the same science and technology can be employed to create address the environmental challenges. The argument of the proponents of good Anthropocene is founded on the idea that that since human species can alter the ecosystem through innovation, the innovation can be used to redesign a sustainable ecosystem. However, the assumption of eco-modernists that the power to fundamentally alter the Earth system through new technologies—from geoengineering to nanotechnology—equates meaningfully with enhanced control is a tacit moral judgment not yet well defended, although it is increasingly being seriously entertained as climate tipping points loom.[13]

The Concept of Ubuntu

Historically, the word Ubuntu has its origin traced to the people of Bantu of Southern Africa in the African Continent. However, the concept is shared beyond Bantu People and the African Continent. Ubuntu is a Zulu/Xhosa word, which is most directly translated into English as 'humanness.' In other to capture the meaning vividly, it is best captured with the Nguni expression "Umuntu Ngumuntu Ngabantu" which means "a person is a person through other people."[14] Inasmuch as the origins of Ubuntu are distinctly African, there have been parallels of similar concepts in other societies, such as the Chinese philosophy of Jen, the Filipino philosophy of Loob, and the Russian concept of Obschina.[15] and as well the Igbo Philosophy of Umunna. Archbishop Desmond Tutu called Ubuntu "the gift that Africans will give the world."[16] He thus argued for wider acceptability and application of the concept beyond Africa.

Khoza describes the concept of Ubuntu as "the capacity in an African culture to express compassion, reciprocity, dignity, humanity, and mutuality in the interests of the building and maintaining communities with justice and mutual caring."[17] The concept of Ubuntu is a vivid reflection of the indigenous setting of African mode of existence comprising of the lifestyle, thinking pattern and relations with other aspects of life. Nelson Mandela captures this succinctly in his description of Ubuntu as a philosophy constituting a universal

truth, a way of life, which underpins an open society. Thus, the Ubuntu Philosophy portrays an African conception of humanity and its relation with other human species and nonhuman species within the Earth systems. Tutu notes that "Africans are social beings that are in constant communion with one another in an environment where a human being is regarded as a human being only through his or her relationships to other beings."[18] In other words, every human person is totally dependent on the communion with others to survive.

Ubuntu is an African concept of personhood in which the identity of the self is understood to be formed interdependently through community.[19] Ubuntu more accurately reflects the fundamental African worldview that conveys Africa's democratic, communitarian, interdependent, egalitarian, and humanistic principles.[20] The Philosophy of Ubuntu is in sharp contrast with individualism. It is an orientation to life that is community-based against individualism. The individual is vital in society, it is within and through the community that the individual is defined.

Ramose notes "Ubuntu as a concept and experience is linked epistemologically to umuntu."[21] His definition of Ubuntu as an expression of African thought shows that knowledge acquired by people is learned from other people. The knowledge not to behave as monkeys but as human beings is learned from other human beings. I am because other people are. Ramose points out that "Ubuntu then is the wellspring flowing with African ontology and epistemology."[22] This is to say Ubuntu philosophy as with religion for Africans is embedded in their day to today practices and language that are crucial aspects of their lives that include activities like birth occasions of a child, giving of names, marriage, funerals, harvesting festivals, rain making prayers, circumcision and other initiation ceremonies, to mention a few."[23]

Ubuntu philosophy is an expression of African thought because Africans respect and value life, acquire and share knowledge, share resources, believe and practise collectivism, and care. Above all, they approach life as human beings with full status. Edwin Etieyibo calls this a humanistic approach to ubuntu, whereby the interests, needs and well-being of the group are seen to be more important than anything and there is emphasis on sharing, caring and compassion for others. Etieyibo sums this up when he remarks, "your pain is my pain, my wealth is your wealth and your salvation is my salvation."[24]

Ethics of Ubuntu as a Viable Environmental Ethics

African ethics have been side-lined for a long time in the generally used ethical discourses, and some western academics have made quite bold claims.saying African culture lacks ethics.[25] An important contribution to a new view of a human being as essentially a being in connections is the African ethical idea of Ubuntu. Because Ubuntu is built on a relational vision, its central insight is the notion that, in order to achieve ultimate wellbeing, humans need on one another. Many academics have noted that we can only fully realize our humanity when we acknowledge and accept our need on and interdependence on one another. This assumption, that humanness is our existential prerequisite of our bondedness with others, so interrelates with the notion of Ubuntu as humanness.[26] The Ubuntu ethic was disparaged by colonial scholars as being primarily a sign of human primitivity, an expression of childish behavior, and also a symptom of dependence complex illness.[27]

Ubuntu is an African ethic, a humanist sub-Sahara African philosophy, and a way of life that emphasises cooperation, compassion, community and concern for the interests of the collective, for others and respect for the dignity of personhood.[28] Ramose argues that botho/hunhu/ubuntu are concepts that are difficult to translate into humanism, especially if the latter is viewed as a particular trend in the development of Western philosophy, and opines that humanness is a more accurate description of the idea than humanism is.[29]

Writing on the foundation of ecological ethics on Ubuntu, Ramose explains:

> This basic difference between humanness and humanism speaks to two different perceptions of and perspectives on reality or being. Humanness regards being or the universe as a complex wholeness involving the multi-layered and incessant interaction of all entities. This condition of permanent, multi-directional movement of entities is not by definition chaos. On the contrary, it is both the source and the manifestation of the intrinsic order of the universe. Herein lies the ecosophical dimension of the indigenous African concept of botho/hunhu/ubuntu.[30]

The distinction between humanness and humanism is necessary as the philosophy of Heidegger presented the concept of humanism as the answer to the question of what it means to be human places more emphasis on the character or essence of the human being than on the being of this being; the human being's being in the world. The issue with focusing on what it means to be human; the core of a human being is that it creates room for definitions of

"human" that label some people as less human or non-human. Thus, the notion of humanness confers a relational meaning that is needed to value other nonhuman species in the environment, as the idea of humanism is analogical to the concept of anthropocentrism.

Ubuntu is that our highest moral duty is to grow as people, and that growing as a person necessitates a deeper sense of community with others. One therefore cannot become more fully human or realize one's true self by exploiting, deceiving or acting in unjust ways towards others.[31] Therefore, caring for one another entails also taking care of the environment. Without this care, the relationship between people and the natural world would be compromised.

Writing on the inherent relational disposition of human beings and the environment, Ramose utilized the story of Ogotomelli to explain how interconnectedness of reality and hence, adopts the interconnectedness of reality to argue for an adoption of an environmental ethics

> "The altar gives something to a man, and a part of what he has received he passes on to others, ... A small part of the sacrifice is for oneself, but the rest is for others. The forces released enter into the man, pass through him and out again, and so it is for all... As each man gives all the rest, so he also receives from all. A perpetual exchange goes on between men, an unceasing movement of invisible currents. And this must be so if the universal order is to endure. The Word is for everyone in this world; it must come and go and be interchanged, for it is good to give and to receive the forces of life.[32]

Ubuntu emphasizes community bonds, a high regard for human values, and a tremendous reverence for the environment and the resources it provides. In this broader context, Ubuntu ideology grants humans a code of conduct with other non-human species in the cosmos. Therefore, in order to be considered virtuous, a person must exhibit complete reverence for all taboos, omens, symbolic (sacred) artifacts, beliefs, and practices that control their interactions with other people and nature.[33]

The relational ethic of Ubuntu is crucial for comprehending the issue of environmental crisis and for guiding solutions. The concept of Ubuntu begins by explaining that the issue arises from a misunderstanding of where humans fit into the larger picture of reality. Modern ideology has mostly propelled anthropocentric, individualistic, and technocratic worldviews at the expense of relational value as the universe's underlying logic.[34] In other words, Eco-Ubuntu, encourages attitudes that promote a hospitable and symbiotic relationship between

humans and non-humans, including the earth, by removing any uncertainty regarding the inherent interconnectedness of existence. In the same light, Ramose opines that ubuntu "is anchored on the ethical principle of the promotion of life through mutual concern, care and sharing between and among human beings as well as with the wider environment. Ubuntu philosophy understands life in its wholeness."[35]

Ethics of Eco-Ubuntu in the Anthropocene: An Imperative for Environmental Sustainability in Africa

If environmental crisis is indeed epoch-changing and humans are a geological force, is this not the worst time to abandon the lessons of history, the insights of the humanities, and the tools of social science.[36] Humans have become the major force of change on the earth, ushering in a new period known as the Anthropocene. This new period has tremendous implications for humanity, which humans are only now beginning to understand. Recently, there is an understanding that society must be considered as an integral part of the biosphere, rather than as distinct from it. Depending on humanity's collective activities, future conditions in the Anthropocene biosphere could be either advantageous or harmful to human existence and well-being. The most daunting problem facing humanity is determining whether humanity has the collective wisdom to manage the Anthropocene in order to sustain a viable biosphere for people and civilizations, as well as the rest of life with whom we share the planet. Scientific evidence has shown that climate change and biodiversity loss are symptoms of the tremendous acceleration of human actions into the Anthropocene, rather than independent events, and they interact with social, economic, and cultural development.

The destruction of natural habitats and the extinction of species, poorly regulated capture, marketing, and consumption of non-human animals, the influence of lobbies to nullify or delay measures to protect natural and social systems, the limitations of current scientific knowledge, and governments' and companies' contempt for available evidence have all conspired to facilitate the current COVID-19 pandemic.[37] Despite pandemics are common in nature, this is the first time one has occurred during the Anthropocene, when human activity is more powerful and environmentally damaging than ever before. The lockdowns provided proof of significant environmental improvements as well as a few downsides.[38] Environmentally, the pandemic has had the unanticipated, encouraging side effect of temporarily lowering pollutants and greenhouse emissions due to decreased industrial activity and automobile traffic. Even while it is obvious that a global economic shutdown cannot be

sustained, the changing scenario contributed to the hope that such reductions in environmental impacts, particularly greenhouse gas emissions, might be maintained if suitable regulations were implemented. It is on this observation that encourage scientists to "tell it like it is". On the basis of this obligation, we declare, with more than 11,000 scientist signatories from around the world, clearly and unequivocally that planet Earth is facing a climate emergency."[39]

The advancement of the Anthropocene epoch has influenced a different conception of Environmental ethics at the end of the 20th century when the human species was acknowledged as the primary cause of contemporary global environmental concerns. Gail asserts that "global environmental challenges, which are characteristic of the Anthropocene, evade resolution in part because they challenge our meaning-making. Climate change is a prime example."[40] Thus, to proffer solutions to environmental challenges, a paradigm shift in how the world operates is required, and a re-assessment of traditional ethics becomes necessary. Given Western modern ethics' conformity to Kant's ethical determinations, particularly the separation between means and ends-in-themselves and the associated criterion of moral validation—rationality—the process of positively appraising the non-instrumental value of nature is deemed challenging. Furthermore, utilitarianism, the approach that opposes Kant's formalism, is far from solving such a contentious problem. Indeed, its guiding principle—maximizing advantage for the greatest number—arises from an atomistic view of reality based on an individualist criterion—sentiency—thus granting moral relevance entirely to the individual. In other words, neither Kant's deontological ethics, Singer's utilitarian ethics, nor the primary varieties of consequentialism provide grounds for moral consideration of collective things such as species, ecosystems, or, in a nutshell, nature. It follows that, the ecological approach, in which the political, cultural, and socioeconomic spheres of human civilization are governed by ecological principles, will serve as an ideal foundational strategy for a post-pandemic world.

In reference to the African perspective on environmental ethics in the Anthropocene, there is a need to appreciate the African emphasis on the interconnectedness and harmonious existence of human and nonhuman species. According to Ibanga, the African worldview is characterized as "accommodative, conciliatory and cooperative."[41] Thus, it connotes the issue of dualism that has fuelled the anthropocentric conception of reality and the human relation to the environment is resolved. In line with the explication of the necessity to espouse an environmental ethic founded on African ontology, Polycarp Ikuenobe contends, "a fundamental problem with environmentalism in Africa is that many Africans are beginning to

understand the underpinnings of the contemporary environment environmentalist views and movements represent traditional beliefs, ways of life, moral views…"[42]

Thus, the African environmental ethic in the Anthropocene ought to be derived from the traditional worldview and philosophy of the African people. Writing on the nature of African ontology, Ikuenobe asserts:

> Reality is seen as a composite, unity of harmony forces… a holistic community of mutually reinforcing natural life forces consisting of human communities….spirits, gods, deities, stones, sand, mountains, rivers, plants, and animals. Everything, in reality, has a vital force or energy such that the harmonious interactions among them strengthen reality.[43]

The reality in African ontology is a whole and not a fragmented one. There is in existence the interconnections and mutual interdependence of forms of life both human and nonhuman species. Ibanga captures this vividly in his postulation that "all these indicate that no specie in nature, whether human or nonhuman, no matter how developed the intellect, can survive on its own without the contribution of other species to its wellbeing and sustainability."[44] It was on the ground to engage environmental ethics in the Anthropocene from the perspective of African ontology, that this thesis adopted the concept of Ubuntu which is indigenous to Africa; specifically to South Africa, to address the question of an ethic in the Anthropocene.

The concept of Ubuntu is not an entirely unique concept and there are similar concepts in other regions of Africa like Umunna in Igbo land, however the concept was adopted for the study given the sophistication and applicability on the concept. As Ramphele writes: "Ubuntu as a philosophical approach to social relationships must stand alongside other approaches and be judged on the value it can add to better human relations in our complex society."[45] It follows that the nonexistence of the concept in some African communities is not enough to diminish the applicability of the concept to address the ethical challenges faced in the Anthropocene. The usage of Ubuntu as an ethic of the Anthropocene does not imply turning back to the clock rather it is a clarion call to innovate new ways of harmoniously co-existing with other nonhuman species in the Anthropocene. The proposition of Eco-Ubuntu accommodates the unification of the two variants of environmental ethical theories; Anthropocentrism and Eco-centrism.

As Pindar and Sutton write:

It isn't a question of exchanging one model or way of life for another, but of responding to the event as the potential bearer of new constellations of Universes of reference. The paradox is this: although these Universes are not pre-established reference points or models, with their discovery one realizes they were always already there, but only a singular event could activate them.[46]

The basic tenet of Eco-Ubuntu is simply the community of human and nonhuman species. This was captured vividly by Steve Biko:

We regard our living together not as an unfortunate mishap warranting endless competition among us but as a deliberate act of God to make is a community of brothers and sisters jointly involved in the quest for a composite answer to the varied problems of life. Hence…..our action is usually joint community-oriented action rather than individualism which is the hallmark of the capitalist approach.[47]

The expression of interconnectedness is the beauty of Eco-Ubuntu. The human species is not entirely distinct from other species, but the human species is involved in the quest to ensure sustainability in the Anthropocene. The greatest good in the Anthropocene is the harmonious relationship within the ecosystem, and anything that contradicts this harmonious relationship should be avoided. The epoch before the Anthropocene has taught humanity the lesson of how an imbalance in the ecosystem could lead to environmental crisis. Human activities should not be an impediment to the welfare of the ecosystem, rather human activities should promote the sustainability of the Earth system in every possible way.

The idea of the human species maintaining harmonious relationships within the ecosystem has raised some fundamental issues, especially in reference to development, whether environmental welfare should take precedence over technology and development. Ethically, one should observe that issue stemmed from the question of the moral status of nature or the environment. It questions the moral standing of nature such that the human species has ethical obligations to nature that are independent of human's ethical obligations to other humans. In response to this issue, Chemhuru was right to assert that

In addition to living well, nature itself must have an additional purpose of supporting the well-being and survival of both human beings and nonhuman living creatures. At the same time, another purpose of conscious human beings could be taken to be the need to safeguard the well-being and purpose of nature. In this case, the nature of the environment as a being is such that it exists for the well-

being of particular not only human beings that live in it, but also for the well-being of particular nonhuman animals and non-animate beings that constitute it.[48]

This line of argument follows that nature intrinsically caters to the wellbeing of the human species, and on the other hand, accords the responsibility to humans to carefully preserve the purposes and goals of humanity and other nonhuman species, which includes the natural environment. The assertion of Chemhuru is consistent with the notion of Eco-Ubuntu which emphasizes the intrinsic value of the environment but places value as well on the individual components of the environment. The environment is intrinsic and does not delimit the value of the human species, neither the value of the human species negates the intrinsic nature of the environment. The proposition of the Eco-Ubuntu is the interconnectedness of all the components of the ecosystem such that the common goal is to maintain balance with the ecosystems.

5.2   Conclusion

There is an ongoing philosophical argument relating the Anthropocene to anthropocentrism. Anthropocentrism is the idea that human is the center of reality. It is in line with the assertion of Protagoras "Man is the measure of all things."[49] Thus, man accords value to other species and other things are valuable only because they are valued by the human species. This anthropocentric conception is also in line with the biblical injunction "Go into the world, increase and multiply," However, the concept of Anthropocene challenges this assumption because implicit in the idea of the Anthropocene is the notion that human is responsible for the obvious environmental crisis faced in the world. In other words, the concept of anthropocentrism lacks credibility in the Anthropocene. It can be assumed that the ideology of anthropocentrism led to the deterioration of the Earth system. On the other hand, if the human being is responsible for the deterioration of the Earth system, it follows that the tenet of Anthropocentrism is accurate as the human species has the ability to alter the ecosystem. The resolution of the conflict between the Anthropocene and the concept of anthropocentrism is problematic, but a critical reflection on the issue reveals that the two concepts are related but distinct. They are related in the sense that both concepts uphold the Anthropos as responsible for influence on the Earth system, but both differ on the approach; anthropocentrism posits the human species as the ultimate being possessing intrinsic value, while other species possess instrumental value. On the other hand, the Anthropocene posits the human species as part of the holistic Earth system, and as such should act in a manner that preserves the ecosystem. The Anthropocene is a story of how the anthropocentrism

disposition of the human species is altering the Earth systems to the point that the human species might be heading towards extinction with other species if the necessary measures are not taken to retract harmonious co-existence in the ecosystem.

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