

# Anthropocene: Post-modern Thinking on Earth's Evolution History

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**Abstract:** "Anthropocene", as an era of geological division adapted to the geological environment of the post-industrial era, has caused human society to reflect on the future and destiny of human civilization. Under the framework of discussing the rationality of the division of Anthropocene, the influence of Anthropocene research focuses on the development strategy and historical view of material society. With the deepening of the research, it will give enlightening significance to contemporary ecological ethics research on the vision of human civilization development.

**Keywords:** Anthropocene, Geological Age, Ecological Modernism, Post-Human History View.

## 1. "Anthropocene" Background and Concept

The so-called Anthropocene can be roughly understood as a period in which human forces constantly and irreversibly transform the earth at the level of geological forces. In a more specific and professional expression, "Anthropocene" means "human activities, as the main external geological force, have a great impact on the surface morphology, the earth environment and the earth ecosystem, which makes the earth system change its original rate of evolution, and the earth system evolves into a new stage of geological history in which nature and human beings jointly influence the future of the earth". According to the definition, the impacts of human beings on earth geology, climate, ecology and environment are mainly reflected in four aspects: the change of geological sedimentation rate caused by human agricultural activities and construction projects, the fluctuation of carbon cycle and temperature change caused by industrialization, the biological changes caused by human beings and the ocean changes caused by human activities. This concept was first formally proposed in 2000 by Crutzen, an atmospheric chemist and Stoermer, an ecologist. They believed that since Watt invented the steam engine in 1784, the role of human beings has increasingly become an important geological force. It is proposed that the Holocene has ended, and today's earth has entered a new geological era dominated by mankind-Anthropocene.

Since the birth of mankind, human activities have significantly influenced and transformed the earth in multiple dimensions. Especially since the industrial revolution, the modern civilization process of human industrialization has brought unprecedented and indelible influence on the earth's environment. According to the Human Development Report of the United Nations Development Programme, the world population has reached 6 billion in the past 300 years, which has increased tenfold. In the 20th century, the scale of comprehensive urbanization in the world has increased by 13 times compared with the previous one, while the growth of other factors such as world economy and energy development is also quite remarkable. It indicates that the earth's surface has been transformed by human beings in the past 50 years far more than at any time in history. Under the background that global environmental problems have aroused widespread concern and scientists are worried about whether the earth's environment can continue to meet the needs of the development of human civilization in the future, the concept of "Anthropocene" came into being and quickly entered the field of public discussion, resulting in numerous derivative branches not only as ecological research, but also as the theoretical fulcrum of post-modern ideology.

## 2. "Anthropocene" Research Significance.

In 2007, Paul Crutzen, together with Professor Will Steffen, American chemist and director of Climate Change Research Institute of Australian National University, and John R. McNeill, professor of environmental history at Georgetown University in the United States, published "Anthropocene: Will Man Overwhelm the Power of Nature?" in Human Environment. The focus of the discussion on Anthropocene has been shifted from the previous climate or ecological changes to the production and

living activities of human beings. The relationship between the historical changes of human production and living activities and the scientific and technological achievements made by human beings, as well as the impact of the changes in human production methods on production and living activities, are discussed, in an attempt to explain the impact of human activities on the earth from a comprehensive perspective with a more historical dimension. The core issue of the world is not only a purely natural science issue, but also a comprehensive and multidisciplinary core issue related to the future fate and development orientation of human civilization. Under the background that the global ideological field has not yet got a relatively convergent development consensus and orientation in the post-industrial era, truly clarifying the significance of "Anthropocene" to human development will provide a far-sighted ideological support for the narrative direction and context of the development of human civilization in the 21st century and beyond. In this sense, the study of "Anthropocene" has been entrusted with an extremely ambitious vision and assumption, which can be roughly divided into two aspects: the material reality of human society and the historical view as ideology.

#### 1) Realistic enlightenment to the development of human material society.

When it comes to the regulation of the development of human society from the ecological perspective, two popular viewpoints—ecological protection and modernism are always considered as two contradictory propositions. Traditional environmentalists, represented by Holmes Rolston III and deep ecologists, pointed out that under the political and moral framework of industrial civilization, human society could not solve the current ecological crisis at all. However, environmentalism, which dispels the subjectivity of human beings and advocates limiting the development of human material society to limit the destruction and intervention on the natural world, has been accused of betraying its own species attribute. After the world was put forward, environmentalism was strongly criticized to some extent because of its romantic fantasy. Supporters of Anthropocene believe that Anthropocene is not only intended to point out a geological era in which human power is dominant, but also to advocate a post-natural scientific research paradigm and environmental ethics, which is concentrated in the so-called Ecomodernist thought along with the future narrative which is dominated by human beings and driven by science.

Although most of the current studies are pessimistic about the impact of human beings on the earth's environment, that is, it can be expected that human beings, as a negative force that will have destructive effects on the earth most of the time, will last for a long time, on the other hand, the new changes in science, technology, culture and politics will provide opportunities for human beings to become rational managers, which are embodied in the following aspects: First, the research and understanding of human beings and the environmental system, that is, "the world", is developing rapidly in an exponential trend, among which: Secondly, the Internet, as the symbol of the information technology revolution, has great power as a global self-management and information sharing system, and the information barriers in global decision-making tend to be eliminated, and the "ecological decision-making tragedy" caused by cognitive limitations will become increasingly difficult to occur. Thirdly, the social state tends to be more diversified and open, and the development of independent media will completely break the past situation that the right to speak and interpret in the field of ecological civilization was monopolized by minority groups. Finally, the democratic political system of human society is constantly growing, and the open political ecology strengthens the role of "civil society", which makes civilization itself have the ability of self-reflection and correction. It must be acknowledged that the environment has created human language, tradition and culture, while human beings are shaping and influencing nature, forming an inseparable community. Therefore, the concern and protection of the environment exists as a dimension of the concern and maintenance of one's own civilization destiny.

#### 2) Remodeling the post-modern global historical view.

In 2009, Dipesh Chakrabarty, an Indian-American historian, published the famous "Historical Climate: Four Propositions" in *Criticism and Inquiry*. Taking the problem of climate warming in the human era as the breakthrough point, he proposed that "explaining climate change from the perspective of human activities means that the long-standing humanists fail to distinguish between natural history and human history." Such a core proposition. It challenges people's traditional cognition of history, that is, people are always the subject of history, and if historical research leaves the subject of people, the study of "counter-factual" purely quantitative historiography will be meaningless. Traditional historians are skeptical about the history which is too grand in time and space scale. They think that only on human scale can historians use "the tools of thinking and emotional imagination", understand "the evidence produced by a specific soul in the rich background of a specific culture", and make "political and ethical judgments". Therefore, in the traditional concept of history, natural history is either separated from human history or subordinate to human history, and becomes the background of the ever-rising stories of

mankind.

Just as natural scientists try to show the "social implication" of the concept of Anthropocene through some attempts, and then think and study the Anthropocene in the dimension of society and even civilization, Chakra Bhatta also emphasized that contemporary historians should break the central position of man in historical narrative and combine human history with natural history to form an overall history under the Anthropocene narrative system. Human history is divided into two categories by him. One is the recorded human history in which human beings occupy the main position, and it is also the history that historians usually study. One is the deep history of human beings beyond the scope of written records, which spans tens of thousands of years. Among them, human beings are only one of many life forms on the earth. As a part of the life history on the earth, human history is scaled on the time series of the overall history. Based on such a more open and macroscopic vision, the reconstruction of historical view under the vision of "Anthropocene" will mainly include the following three aspects.

First, rethink the concepts of time and space in historical research. Similar to "Great History", which extends the time span of historical research to the time when the earth was born, the concept of "Anthropocene" also requires that the time dimension of human history be built into the time dimension of the earth's history, so as to truly communicate with "history" with a more systematic time view that matches with natural science research.

Second, abandon the anthropocentrism in historical narration. The narrative of "Anthropocene" does not mean absolute emphasis and respect for human subjects, but just puts human beings and "passing on nature" in an equal position. Although human beings have become a kind of geological force, the existence of transcendence of human beings is essentially denied because the harm caused by human beings to the earth's environment and ecology threatens human existence equally. Like other species, human beings depend on the material basis on which all living things depend.

Third, pay attention to the non-human factors in the historical process. Like other non-human species in a broad sense, human beings should not only follow the same laws of physics and biochemistry, but also follow the same laws of natural selection and evolution. Compared with some species, human beings do not have special evolutionary advantages in adapting to the environment. Some historians point out that the Anthropocene may provide an opportunity to break the "great chain of being" in which non-human beings are placed under human beings, so that the former can show its due significance and value.

Only by putting human history in the context of deep history can people make an objective understanding of the concept of Anthropocene, and then make responsible plans for the future of mankind. The concept of "Anthropocene" wants to express a sense of uncertainty and crisis, and emphasizes the community of destiny between human beings and the natural environment. The ultimate goal of this transcendence of narrow human history is to construct a new model that is conducive to the survival and sustainable development of human civilization. As Edward Wilson, an American biologist, said: "We need this vision with a longer time span... not only to understand our human species, but also to more firmly safeguard its future."

### **3. "Anthropocene" Research Status and Prospects.**

After the word "Anthropocene" was put forward, "Anthropocene" gradually gained the attention of scientists and was reflected in the corresponding research trends. In 2002, Crutzen put forward the idea of "Anthropocene" again in *Nature* magazine, which was generally accepted by academic circles and began to become a common word in scientific media. In February, 2008, Zalasiewicz and 21 other members of the Stratigraphic Commission of the Geological Society of London jointly published a paper on *GSA Today*, arguing that human activities, especially human economic activities since the industrial revolution, have had a global impact on climate and environment. These impacts involve many layers, such as sedimentation, atmosphere, biology, ocean and cryosphere, which leave visible and measurable marks in the strata and can provide stratigraphic evidence for the establishment of the lower limit of Anthropocene. In 2009, International Stratigraphic Commission (ICS) specially set up The Anthropocene Working Group with Zalasiewicz as its chairman, to investigate whether the changes caused by human activities meet the criteria for formally starting a new geological era. The team will submit the final report at the 35th International Geological Congress to be held in South Africa in 2016, and then the geological period will be finally renamed by voting—Period, epoch or stage. In May, 2011, about 20 Nobel Prize winners submitted Stockholm Memorandum to the United Nations, proposing to change the geological age in which mankind now lives into Anthropocene. On December 21st, 2011, *Nature* reviewed and summarized 11 scientific research progress and science and technology policy events in 2011, and

included "Anthropocene" under the title of "Living in the Anthropocene". In the first issue of *Nature Geoscience* in 2013, nine famous scientists in the field of Earth and Planetary Science were invited to review and sort out the progress and hot spots in the field of Earth Science since 2007, and Anthropocene was one of the nine hot spots.

In recent years, especially since 2012, there have been more and more topics about Anthropocene in relevant international conferences, which shows that the term "Anthropocene" has been paid more and more attention by the academic circles, especially the earth science circles. Funded by the Norwegian Research Council and led by Vidas, the Friedrich Nansen Institute (FNI) is responsible for the 4-year (2011-2014) research program, "International Law for an Anthropocene Epoch", which aims to solve the problem of how international law will face this new challenge once the Anthropocene is officially identified as the geological time unit. The important fields include the law of the sea, the environmental law and. In 2011, The National Science Foundation of the United States funded a 5-year (2011-2015) project conducted by the research team of the University of Maryland led by Ellis. The research project, "globe: evolving new global work flows for land change science", costing 1.83 million U.S. dollars, will assess the global impact of local and regional land changes caused by human beings, and thus help to determine the mark of Anthropocene in land systems.

There is an important difference between the Anthropocene and the previous geological ages, that is, all the geological ages in the past have ended, we know their whole history, and the Anthropocene is continuing. With regard to Zalasiewicz's point that geologists will see fossils left by our age in the future, Finney, chairman of the International Commission on Stratigraphy (ICS), thinks that it is wrong to define a geological age only by prediction. Menning of the German Stratigraphic Commission (DSK) said that introducing Anthropocene into the geological year would bring more problems than benefits, because it would force geologists to re-examine their criteria for defining geological times.

History is always the product of the times. Whether the Anthropocene Era can become a new era in the history of the Earth or not, it urges human civilization to reflect on the past, examine the present and rationally plan the future with a new historical thinking. The reason behind this is not the particularity and superiority of human species, but that human beings, like the earth and other species, are facing a common destiny.

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