

Proceedings

Ecological Transformation and Man-Machine Symbiosis: A Study on the Relationship between Human and Artificial Intelligence [†]

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Abstract: The theory of “ecological symbiosis” discovered by Margulis and Raulock updates the relationship between humans and nature to “the symbiotic relationship between man and ecology as a whole”. Human activities transform human ecology from the aspects of life evolution and cultural evolution. Artificial intelligence, as the core of human ecology, has a symbiotic relationship with human beings, and has the independence of human ecology. The possibility of life becomes a symbiotic species with humans.

Keywords: human nature; symbiosis; information; artificial intelligence; ecological transformation

1. Introduction

1.1. Cognitive Evolution of the Relationship between Humans and Natural Ecology

Lynn Margulis proposed that “some cell components today are free-living bacteria, and any organism larger than a bacterium is a super life that originates from the symbiotic origin of bacterial cells” [1]. James E. Lovelock proposed the “Gaia hypothesis” to further the symbiotic relationship. He believed that the earth’s ecosystem is a self-regulating and relatively stable whole with negative feedback control [2]. The Gaia hypothesis has been controversial for a long time. At present, two aspects of the connotation are generally accepted by the scientific community: first, the chemical composition of the earth (including the atmospheric composition and climate temperature) is caused by the biological metabolism of the earth’s biosphere. The second is that the earth’s ecological circle affects the environment, which in turn affects the life evolution of the ecosystem. The ecological environment and life in the ecosystem are a process of co-evolution [3].

1.2. Symbiotic Evolution of People in Natural Ecology

A symbiotic relationship is the symbiotic evolution of species that are both interdependent and competitive in the same ecosystem. The oxygen that aerobic animals breathe is the excretion of plant photosynthesis and the carbon dioxide required by most plants is the excretion of animal respiration, forming a symbiotic relationship. Symbiotic relationships far exceed individual species. It is the common symbiosis that shapes today’s ecological landscape. There is also competition in the symbiotic ecosystem, competing with species in the ecosystem for survival space and nourishment.

2. Conversion of Natural Ecology to “Humanized Natural Ecology”

2.1. History of Ecological Transformation

In the evolutionary history of life on Earth, there have been several species extinctions. These include: Ordovician: gamma-ray bursts caused 56% of species to become extinct; Devonian: Earth warming, mantle movement causing most of marine life to be extinct and plants reproduce in large numbers; Permian: continent drift and meteorite impacts killed 96% of species; Triassic: volcanic movements and rising temperatures have caused about half of marine species to disappear. Over the next 150 million years, dinosaurs evolved into the largest and longest-lived animal population on earth on Earth; Cretaceous: crustal movement, sea and land changes causing gymnosperms and reptiles to decline successively. Plants, birds, and mammals have developed. The stage of biological extinction is a process of ecological transformation, and it can be considered that the structure of the symbiotic species caused by the ecological change is caused by the ecological change. At the same time, the species that are compatible with the new ecological environment have gained prosperity and formed an ecological conversion.

2.2. Transformation of Human Activities to Natural Ecology

Marx proposed the “human nature theory” in the “Manuscript of Economics and Philosophy in 1844”. “Humanized nature” is the nature that has been transformed by human practice and imprinted with human purpose and will [4]. Niu Longfei proposed in “Humanistic Advancement” that “human evolution is no longer a simple biological evolution, but a dual-track co-evolution of biological evolution and human evolution” [5]. Therefore, human activities have evolved from physiological evolution and cultural evolution. Two forms transform natural ecology into “humanized natural ecology”.

2.2.1. The Transformation of Human Life Evolution into Natural Ecology

Human beings exist in the symbiotic evolution of natural ecology. Before the history of civilization, the symbiotic evolution of human beings was reflected in their own evolution of life. This evolution is the direct existence of everything from inorganic to organic in the earth’s ecology such as sunlight, water, air, animals, plants and microorganisms in human and natural ecology, or the indirect exchange of matter, energy and information to maintain their own metabolic processes. The transformation of natural ecology during the evolution of human life is part of its own evolution, which unfolds with its evolution.

2.2.2. The Transformation of Human Cultural Evolution into Natural Ecology

Cultural anthropologist Marvin Harris believes that in the past 100,000 years, the average volume of the human brain has not increased, while the complexity and evolution rates of the social and cultural system have increased significantly [6]. The materialized science and technology in the industrialization period were in the form of machinery and artificial facilities, as intermediary tools for humans to transform the natural ecology. The mechanization of industrial manufacturing is rapidly changing the material composition, distribution and the physical and chemical states of the Earth’s ecology. The joining of data networks and artificial intelligence has become a new intermediary link for humans to transform the natural ecology. The process of comprehensively transforming the natural ecology has been transformed by means of dataization, intelligence and automation.

3. The Possibility of Artificial Intelligence as a Human Species

3.1. Ecological Basis of Artificial Intelligence

The transformation of natural ecology into anthropomorphic natural ecology manifests itself as a dual dimension of human life evolution and cultural evolution. Artificial intelligence can better

communicate, design, manufacture and run these human-designed units, and at the same time become the core of the entire humanized natural ecology. Humanized natural ecology is consistent with human design and the manufacture of artificial intelligence. Extracting natural resources to transform them and producing mechanical and electronic products at the same time, a process similar to metabolism, is completed with human participation. If it is said that a new ecology is to produce a new life and symbiosis structure that matches it, then the humanized natural ecology has made ecological and material preparations for artificial intelligence.

3.2. Symbiosis Structure Foundation of Artificial Intelligence

Artificial intelligence, as a product of humanized natural ecology, and as a product of human cultural evolution, is interrelated with human existence. The relationship of dependence and competition in symbiosis is quietly forming between humans and artificial intelligence.

3.2.1. Interdependence between People and Artificial Intelligence

The development of human society, whether it is the evolution of genes and life or the evolution of culture, is ultimately the evolution of human cognitive ability, which has become the core competence of human society. Human beings use rationality to understand the objective world, but their understanding of the natural world, and the management of the transformation of humanized natural ecology, have made people realize that the essence of the world is complexity rather than rationality. Complex thinking cannot be achieved by human rational cognition. Intelligent computers have been designed, programmed and manufactured by humans to have the ability to analyze complex worlds. Humans continue to iterate on the cognitive capabilities of artificial intelligence, software and hardware design, data as well as energy provision. Similar to the symbiotic relationship in natural ecology, the supply of artificial intelligence to humans by artificial intelligence and the constant giving of “creative design” by artificial intelligence make that human life and the capabilities of artificial intelligence have been better developed and reflected. This shows the dependence between humans and artificial intelligence.

3.2.2. Potential Competition between Humans and Artificial Intelligence

The evolution of intelligence and cognition has achieved the advanced nature of human evolution in natural ecology. Artificial intelligence is also at the top of the evolution of humanized natural ecology with the ability to store, analyze and judge data. Human cognition and artificial intelligence inevitably encounter and compete on the evolutionary path. The way humans perceive nature is reflected in reason and the development of dialectical thinking has realized the leap of human thinking from linear to non-linear. The direct understanding of complexity is the ability that human beings currently do not have, but the evolution of human beings from animal instinct to rational thinking to dialectical thinking implies the possibility that humans will evolve into Non-linear thinking (complex thinking). As the core of the humanized natural ecology, artificial intelligence replaces human beings to handle various complex operations, that is, it replaces human cognitive ability to develop complex thinking. It is possible to cut off the possibility of the development of human cognition to a higher level.

3.3. Artificial Intelligence as the Boundary of Possible Life

Humberto Maturana proposed the theory of self-generation, which holds that “the dynamics of self-generation and self-sustainment of all life’s existence” [7]. Self-made organisms can undergo metabolism, while non-self-created organisms cannot. The basic principle of self-generation theory does not require the survival of life to depend on any special material. Life can be composed of water or other materials, without having to stick to the basic characteristics of carbon-based life. Humanized natural ecology prepares the soil for the evolution of artificial intelligence from human culture to independent life, and its complexity is gradually accumulating. Human demand for artificial intelligence is becoming higher and higher and its iteration is gradually accelerating. These factors

point to the generation and maintenance of self-realization by artificial intelligence, which will eventually become a common species that is interdependent and competitive with humans.

4. Conclusions

In the symbiotic evolution, human beings transformed natural ecology into humanized natural ecology through the two aspects of life evolution and cultural evolution. Humanized natural ecology has become an irreversible process. If human beings can properly construct humanized natural ecology, grasp the criticality of natural ecology and humanized natural ecology, and deal with the symbiotic relationship between human and artificial intelligence in harmony, then human can maintain their dominant position on the evolutionary path and continue to dominate the continuous and orderly evolution of the Earth's ecology. If the use of artificial intelligence is not good, and the development and protection of the ecology is not adequately controlled, artificial intelligence with an independent statement may be bred and replace the advanced position of humans on the evolutionary path.

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