

Chapter 1

The Socio-economic Context that Ecological Aesthetics Produces



The necessity of the economy and society produced by ecological aesthetics must explain whether the form of human civilization should achieve a new transition from industrial civilization to ecological civilization. This chapter first introduces two deeply and widely influential books, *Silent Spring* and *The Limits of Growth*, then it explores the problems of “disenchantment” and “Reenchantment,” and finally it gives concrete accounts of the arrival of the age of ecological civilization and the contemporary ecological condition of China.

1.1 Humanity is Already at the Crossroads—Humanity is Transitioning from Industrial Civilization to the Initial Awakening of Ecological Civilization

(1) Rachel Carson and *Silent Spring*

Rachel Carson (1907–1964) was a famous American marine biologist of her time, and author of *Under the Sea Breeze*, *Surrounded by Our Ocean* and *Ocean Edge*. Her most famous and most representative work is *Silent Spring*, published in 1962, which has already become the “milestone canonical work” in contemporary ecological theory, and is also a canonical work of literary ecological critique. The writing of this book took a good many years in the process of which Carson lived through two great misfortunes: the first is her mother’s passing; Carson never married and depended on her mother for her whole life, so her mother’s passing was a heavy blow to her; the other time was Carson herself suffering from cancer. Two years following the publication of *Silent Spring*, in 1964, she passed away. This book not only manifests the passion for literature and depth of thought that she had, but also exhibits her rigor and positivistic spirit as a scientist. She painstakingly compiled large amounts of evidence, and after putting it through large amounts of survey studies, the book fiercely attacks the damage wreaked on the earth and atmosphere by pesticides and points the sharp point of her pen directly at the production of DDT. The publication

of this book gravely offended the interests of the agricultural capitalist and the groups of scientists related to them, who criticized, ganged up against her and even launched fatal blows. *The New York Times* used a lively and directive title when discussing her case—“The Silent Spring is Now Noisy Summer.” Carson obstinately braved the pressure, made sure the publication of the book went smoothly, and it became one of the highest grossing books in America and the whole world at the time. It is precisely because of this book that America passed an environmental protection law. The publication of the book also genuinely became a turning point for ecological problems. “She deployed explicit, richly poetic and easy to understand language to concretely describe how pesticides damage the American resources of air, soil and water and how the damage incurred from the abuse of pesticides greatly outweighed the benefits they were bringing about”, “she wakened people to ecological problems with the touch of her own pen”, and many Americans saw Carson as a brave hero.¹

(2) **An Allegorical Revelation—Humanity Endangers Herself**

The first chapter of Rachel Carson’s *The Silent Spring* imagines the condition of a town in the central America suffering from the destructive effects of pesticides. What accompanied the modernization of American agriculture was initially the widespread use of such modern agricultural technologies as fertilizers and pesticides, which means putting tons of pressure on the ecological environment. This town that Carson envisions would hear a cacophony of birds singing the glory of blooming diversity, a cacophony that dramatically dims down to a dead silence, the reason being that the overuse of such insecticides as DDT wreak havoc on the fields and soil and harm insects and all species of birds, which is effectively people harming themselves. This town is a reflection of countless U.S. towns during the 60’s; it is an extremely illustrative allegory of industrial civilization leading humanity to harm itself. Humanity not only destroys nature, but harms humanity itself, “this means that malignant disease will strike two out of three families.”²

(3) **The Merciless Denunciation of an Era Dominated by Industries Trying to Make Money at Whatever Cost**

In *Capital*, Marx argues that the essence of capital is the pursuit of the unlimited proliferation of capital. In *Silent Spring*, Carson gives a vivid interpretation of this conclusion from her own perspective. In the book, she exposes the reason causing the silent spring to be the overuse of modern agrochemicals and specifically the pesticide DDT, but the ultimate reason behind this phenomenon is the domination of capitalist industries, which seek the maximization of profit. She states, “it is an age dominated by industry, in which the right to make a dollar at whatever cost is seldom challenged.”³ She traces this situation further back to the capitalist pursuit of money developing since the industrial revolution, which is precisely the essence of capital Marx spoke of as the pursuit of the proliferation of capital, but she elevates

¹Peichao [1], p. 115.

²Carson [2], p. 192.

³Ibid., p. 11.

this problem to the level of public health. She states, “As the tide of chemicals born of the industrial age has arisen to engulf our environment, a drastic change has come about in the nature of the most serious public health problems.”⁴

(4) **Revealing the Law of the Balance of Nature**

Rachel Carson was a marine biologist, who skillfully applied basic biological theories in her book, specifically the theory of the balance of nature, and advocated the thought of the food chain. The famous English historian Arnold Joseph Toynbee also advocated the theory of the food chain, stating that humanity’s destruction of the natural environment commits the crime of “matricide.” Carson states, “In some quarters today it is fashionable to dismiss the balance of nature”, “but it is still there: a complex, precise, and highly integrated system of relationships between living things which cannot safely be ignored any more than the law of gravity can be defied with impunity by a man perched on the edge of a cliff. The balance of nature is not a status quo; it is fluid, ever shifting, in a constant state of adjustment. Man, too, is part of this balance. Sometimes the balance is in his favor; sometimes—and all too often through his own activities—it is shifted to his disadvantage.”⁵ Carson also states about the chains of life that, “from the small-as-dust green cells of the drifting plant plankton, through the minute water fleas to the fishes that strain plankton from the water and are in turn eaten by other fishes or by birds, mink, raccoons—in an endless cyclic transfer of materials from life to life.”⁶ The theory of chains is extremely important in contemporary biological thought. Every entity and biological being on earth, including man, is a link in this chain of life, and enjoys the rights that it deserves to enjoy in this chain, and should also take on the responsibility that the chain gives it whether consciously or unconsciously—which is to maintain the stability and balance of the chain of life. Today there is a saying that the chain of life may still be restored after being destroyed, but actually the chain of life is irrecoverable after it is destroyed. After an ecological milieu is destroyed and then repaired, the ecological chain in it has actually already transformed and is no longer the same ecological chain that existed prior to the destruction. After primeval forests have been felled, the ecological chain is destroyed, after which planting trees may bring about another new chain, but the original chain is no longer recoverable; After the Huang He river is polluted, we can treat it, but the chain of life in it is already altered, and the Huang He river changes into another Huang He river after treatment. The facts prove that ecological conditions are singular and unrepeatable. So, we have to protect and try to maintain balance in the chain of life.

(5) **The Critique of Humanity’s Arrogant Fantasy of “Controlling Nature”**

The saying of “controlling nature” is all too common. In the last century we said “to hell with Nature, the earth can produce as much as man wills,” which exudes from great confidence in controlling nature, but a confidence which is an ignorance, a

⁴Carson [2], p. 162.

⁵Carson [2], p. 215.

⁶Ibid., p. 39.

self-aggrandizing fantasy. The human species in fact cannot possibly have complete control of nature, and on the contrary can only respect nature and follow nature. Marx never respected controlling nature, “but respected shaping nature in accordance with the laws of beauty”, which include two aspects: one is the needs intrinsic to species, another is the needs intrinsic to human being. In satisfying the needs of human beings, we also must respect the needs of species, which is to speak of respecting nature, not controlling it. When Carson speaks of man controlling nature, she states, “The control of nature is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man. The concepts and practices of applied entomology for the most part date from that Stone Age of science. It is our alarming misfortune that so primitive a science has armed itself with the most modern and terrible weapons, and that in turning them against the insects it has also turned them against the earth.”⁷ Using the pesticide DDT to control the growth of so-called pests leads to the “silent spring,” which is but humanity reaping what it has sown. Similar to this, China once got caught up in the movement of “eliminating the four pests,” when sparrows were thought to be one of the so-called “four pests,” and the Chinese people wiped out the sparrows through many methods from spraying chemicals to trapping them with nets, practices which were likewise extremely infantile, resulting in the destruction of ecological chains and the balance of nature.

(6) **Warning that Humanity is Standing Where Two Roads Diverge**

In *Silent Spring*, Rachel Carson points out the seriousness of ecological problems and issues a solemn warning to humanity. She states, “we stand now where two roads diverge. But unlike the roads in Robert Frost’s familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road—the one ‘less traveled by’—offers our last, our only chance to reach a destination that assures the preservation of our earth.”⁸ What she calls “the road we have long been travelling,” is actually that of humanity destroying itself by polluting the ecological environment, while the other seldom travelled fork in the road is that of humanity and nature balancing, harmonizing and unifying.

1.2 *The Limits to Growth*—The Other Model of Development that Humanity Should Choose

(1) **Thinking on the Model of Human Development—Peccei and the Club of Rome**

The Club of Rome is an international, non-governmental, non-ideological, cross-cultural civilian group of international academic researchers, who do not serve the

⁷Carson [2], p. 263.

⁸Ibid., 244.

interests of any state or government. This club has a group of world renown physicists, biologists, mathematicians, economists, sociologists, philosophers and prospectors. Its founder is the Italian Aurelio Peccei (1908–1984). Peccei was born of a progressive cultural family from Torino, a doctorate in economics, a famous Italian industrialist, social activist and researcher of global problems. He once worked at Fiat Automobiles, dedicated himself to the anti-fascist leftist movement during WWII, and became a member of the Italian resistance movement. In 1944 he was thrown in prison for a year. After the war he continued to work at Fiat Automobiles, and resided in China for eight years. After 1957, with the support of Italian investors, government officials and industrialists, he founded an international non-profit engineering and economic consultation company that he presided over as CEO, and it later developed into Europe's largest and most vital economic consultation company. In the middle of the enterprise, Peccei felt accomplished enough to step back from the company, and put his focus on the human predicament, hoping to find a method to alter humanity's course leading to disaster. In April of 1968, under his initiative, more than 30 specialists, including scientists, educationalists, economists and entrepreneurs from ten countries, including Italy, Sweden, Japan, the Federal Republic of Germany, and Great Britain, attended a meeting at the Accademia dei Lincei in Rome, where they discussed present and future predicaments. This was the first international meeting where the problem of the human predicament was discussed. The Club of Rome was born on the ground of this meeting. So far, the Club of Rome's nearly 100 representatives coming from 40 countries engage in cross-disciplinary innovative research on such global problems as the population, resources, food, energy and environment in current societies, and wrote a series of synthetic investigative reports: *The Chasm Ahead*, *The Limits to Growth*, *Mankind at the Turning Point*, *Road Maps to the Future*, *Dialogue on Wealth and Welfare*, etc.

The Limits to Growth is a scientific report on the development of human social economy written by four Club of Rome entrusted young scientists from MIT. The book was published in 1972, which is precisely the year in which *The Declaration of the United Nations Conference on the Human Environment* was adopted, marking the point at which humanity stepped into the era of ecological civilization, when ecological problems became global problems. *The Limits to Growth* explains the limits of growth with scientifically vetted data and reasoning, and reveals to humankind for the first time the severe consequences of unlimited growth on a limited earth, sending shockwaves throughout the globe. The revised edition was published in 1992, and the 3rd edition in 2004. The 3rd edition once again sounds the alarm on the issue of growth with 30 years of additional data to back it up. Just as the author says, this book is not simply a book making predictions about humanity's future, but is rather a book that makes simulations of all kinds of scenarios and consequences on the basis of known data and hypothetical situations, a book that provides humanity with the correct path to choose, and also a book of warning to the world. The author repeatedly argues "that humanity has already overshoot the carrying capacity of the global environment, but still has enough time to reflect on and choose active

measures necessary to make corrections even at the global level”.⁹ The significance of this book for humanity cannot be underestimated, but at first, it met with great resistance, because it aimed at limiting growth, and advocated an “enough is enough” model of life, which for those craving growth and overconsumption was unbearable.

(2) **The Three Great Transformations of the Model of Development in Human History**

The Limits to Growth brings up the three great transformations of the model of development of human history. First is the transformation of the model of economic social development. The author remarks, “Human history has witnessed several structural transformations. The agricultural and industrial revolutions were the most profound examples”.¹⁰ These two transformations both arose out of “shortages” and “deficits,” and were forced as the result of having no other alternative. The agricultural revolution was humanity’s successful coping with a shortage of wildlife species.¹¹ Due to population growth, the decrease of wild animals in the hunting economy could no longer satisfy people’s needs, so humanity settled down and became sedentary, choosing crop growing and the agricultural economy instead. Some nomadic regions of Chinese Inner Mongolia no longer adopt the nomadic model of production, but developed into a enclosure-raising model instead. I once went to a huge pasture in Inner Mongolia, but scenes of “wind blowing the grass and the sight of cows and goats” are already hard to find, the grass grows very short, and although the locals say that grass is very nutritious, it ultimately reflects the trend of insufficiency of soil fertility and an originally nomadic people being forced to turn toward agriculture under the pressure of the growth of population and demands.

In accompaniment with historical development, “greater population growth produced new shortages, specifically shortages of land and resources. Thus, another revolution became inevitable”.¹² At this time, “machines and not land became the core means of production. Roads, railways, factories and chimneys littered the horizon, and the city also continuously inflated in size. Such changes are also a complicated enjoyment”.¹³ This shows that because of rapid population growth, traditional agriculture could no longer sustain the life of such populations, thereby bringing about new shortages, which is the main reason behind the birth of the industrial revolution. But, “the success of the industrial revolution just like the hunting and agricultural revolutions before it ultimately brought about its own shortages as well,”¹⁴ and such shortages include the aspects of “source” and “sink.” “Source” refers to resources; “sink” refers to the earth’s carrying capacity for pollution. This leads to a new revolution of “sustainable development.” *The Limits to Growth* points out, “Like the other great revolutions, the coming sustainability revolution will also change the face of

⁹Meadows [3], Forward page.

¹⁰Ibid., p. 223.

¹¹Ibid., p. 248.

¹²Ibid., p. 249.

¹³Ibid.

¹⁴Meadows etc. [3], p. 250.

the land and the foundations of human identities, institutions, and cultures. Like the previous revolutions, it will take centuries to unfold fully—though it is already under way.”¹⁵ The “sustainable” development revolution that is already underway is also the ecological revolution, which has the following characteristics:

1. This is a revolution in consumer society that makes people maintain a “suitable” consumption of material life;
2. This is a revolution in making “sustainable, efficient, plentiful, equal, better and collective” the highest values for society as a whole;
3. This is a revolution in respecting the following principles:
 - ① The economy is a means and not an end, it serves the welfare of the environment and not the reverse;
 - ② Build efficient and renewable energy systems;
 - ③ Build efficient and closed-cycle material systems. That is build material systems that can recycle waste or render waste harmless. In June of 2008 China gradually began halting the manufacture and usage of non-decomposable plastic bags, which is an exceptionally good policy measure.
 - ④ Technological designs reduce waste emissions and waste products to the absolute minimum, and the whole of society decides not to produce waste emissions and waste products that technology and nature cannot treat. In developed nations, the sorting of trash is very strict, differently colored plastic bags hold different trash, organic materials are separated from inorganic materials, and so is the decomposable from the non-decomposable, and trashed that is mixed together must be taken back;
 - ⑤ Maintaining the diversity of ecosystems. The ancient adage goes: “what is harmonious grows with one another, what is homogeneous does not transfer.” Any species on earth is a member of the ecological chain, no matter how extremely unimportant humanity might view them, every species has its right to survive, and plays its own unique function in the chain of life;
 - ⑥ The reason for living and the reason for wanting to make your own living conditions improve no longer involve the increase of material enjoyment.¹⁶ Of course, we want to guarantee necessary material satisfaction. We want to build a comfortable society, but cannot endlessly seek material enjoyment and possession.

(3) **Several Key Terms**

For the sake of explaining the relationship between development, resources and environment, *The Limits to Growth* creates a unique vocabulary, which reflects the author’s basic thought and constitutes the key terms of the whole book.

¹⁵Ibid.

¹⁶Meadows etc. [3], p. 254.

“Sources” are the resources that maintain the development of human life. They can be divided into two kinds: renewable resources and non-renewable resources. Renewable resources include soil, water, forest, fish, etc; non-renewable resources include fossil fuels, rare minerals deposits, underground water. *The Limits to Growth* brings up two principles for “sources”.

1. For renewable resources, demand the sustainable rate of use to be no higher than the rate of renewal. For instance, the amount of fish caught cannot be higher than the growth rate of the population of remaining schools of fish.
2. For non-renewable resources, demand the sustainable utilization rate to be no higher than the sustainable rate of utilization of the renewable resources used to replace them. For example, the utilization rate of oil cannot be higher than the production rate of such new resources that replace oil like wind, electricity, and photo-electricity, otherwise when oil is all used up, the resources used to replace it cannot satisfy demand.

“Sink” is nature’s capacity of absorbing and purifying human waste. For “sink” there is also a principle of sustainable development—“the rate of sustainable emission cannot be higher than the speed at which the waste is recycled, absorbed and harmlessly decomposed in the sink.”¹⁷

The economist Herman Daly describes these three previously mentioned principles “the three simple principles of the sustainable limits to the capacity of matter and energy to absorb and emit”.¹⁸

The idea of an “ecological footprint” is a new concept arising from ecological philosophy, specifically from the book *Limits to Growth* (third edition) from the 1990s. The term becomes an important keyword for the book. The term “ecological footprint” refers to “the relationship between the human needs of the planet and the capacity that the earth can provide”,¹⁹ specifically “providing resources for the international community (food, feed, trees, fish and urban land) and the area of land needed to absorb emissions (carbon dioxide)”.²⁰ 1.3 billion people survive on 9.6 million square kilometers of land in China. To contrast, only less than 40 million people live on more than 10 million square kilometers of land in Canada. China’s ecological footprint is much smaller. In the past, Chinese textbooks often talk about China’s “vast territory and abundant resources.” However, from the perspective of ecological footprint theory, China’s pressure on environmental resources is very large: China has neither a vast territory, nor abundant resources. Mathis Wackenagel predicted the following by using ecological footprint theory: in the 1980s (1980) human demand and the Earth’s carrying capacity are roughly equal. By 1999, human demand had exceeded the Earth’s carrying capacity by 20%. WWF also noted in a report that the world’s average ecological footprint is 2.2 hectares per person, much more than the 1.8 hectares that the Earth can offer. Since the 1960s, China’s

¹⁷Meadows etc. [3], p. 52.

¹⁸Ibid., 50.

¹⁹Meadows etc. [3], p. 3.

²⁰Ibid., Forward page.

average ecological footprint has doubled. The current demand is more than double the amount of sustainable supply in the country,²¹ which demonstrates the seriousness of the problem.

“Exponential growth” refers to a way in which populations, capital and economies grow. ““That is, the process of doubling, doubling, and doubling, is very surprising, and it is so fast to produce such a huge number.”²² This is to say that when a quantity increases with its existing ratio, it grows exponentially. For example, when somebody deposits \$100 into the bank at 7% interest, it will to \$107 in the first year. In the second year, the 7% rate will lead to a growth of \$7.49. At this rate, the initial deposit will be able to grow to \$196.72 by the tenth year, almost doubling in value. To contrast, if you put \$ 100 in a jar and add \$7 per year, you will only have \$149 after ten years, which is linear growth. By the end of the 50th year, the money in the bank account would be 6.5 times greater than that of the jar at almost \$2500. According to the author of *Limits to Growth*, the population growth in less developed regions has increased exponentially over the past half century, and the population has doubled in 19 years, while the population in more industrialized areas has grown linearly and more gently. Regarding the exponential growth of the population, there is a real problem in front of us: regarding our ecological footprint, is there a growth limit population demands and ratios of people to land? And if so, where is the limit?

The original meaning of “overshot” is excessive, overdone, over, overloaded, crossing the border. “Overshooting, is unintentionally and unconsciously overshooting limits”²³ as the book says. In 1992, 1,600 scientists from over 70 countries, including 102 Nobel prize winners, signed the World Scientists’ Warning to Humanity: humanity and the natural world are “overshooting”, and human activity is bringing grave and irreparable damage to the environment and important resources. If it is not stopped, much of our actions at present will severely threaten the human society, earth and animal kingdom that we hope for, and will alter the world of human life to the point of being unable to continue life as we know it. If we are to avoid the conflicts our present path is bringing about, we urgently need some fundamental changes.

(4) **The World has a Choice**

The Limits to Growth does not predict the future of the world, but rather provides all kinds of models for humanity to decide through a scientific attitude and scientific method. It states that “what the world faces is not a predestined future, but rather a choice”.²⁴ Three models are provided to humanity to choose from in this book:

- ① The world has no limits and can grow infinitely, the result of which is squeezing the earth dry to the point of collapse.
- ② The limit is closing in, and humanity cannot possibly respond appropriately, the result of which is also collapse.

²¹Cited from Reference News June 11, 2008.

²²Meadows etc. [3], p. 19.

²³Meadows etc. [3], p. 2.

²⁴Ibid., p. 262.

- ③ The limit genuinely exists, and in some respect we have overshot it already, but with enough time we may possibly reduce humanity's ecological footprint, and continue to evolve toward a much better world for the absolute majority of human beings on earth.

The author of *Limits to Growth* tells us that for the third model, “from the evidence we have mastered, from the world data to the computer model, it shows that it is credible and achievable”.²⁵ This is the conclusion of *Limits to Growth*.

1.3 The New Relationship between Human beings and Nature—From “Disenchantment” to “Reenchantment”

(1) On the “Disenchantment” of the world and some “Reenchantment”

The so-called “enchantment” view of the world holds that ghosts, demons and other superstitious entities exist. In ancient agricultural societies, science and technology was not yet developed, and people did not understand natural phenomena. They therefore believed that many mysterious phenomena arose due to the gods or ghosts, thereby “enchanting” nature. In some parts of China's rural areas in the past, snakes, foxes, and other animals are often sacred because of their color, and cannot be killed, as doing so would bring about disaster. In industrial society, science and technology have developed, and people's ability to know the nature has been greatly enhanced. As a result, nature's mystery began to fade away. During the Enlightenment, Francis Bacon proposed that “knowledge is power” and believed that knowledge can change everything, which is a heroic declaration of human respect for knowledge and the self. Rene Descartes put forward the idea that “I think so I am”, and believed that reason is above all else, and therefore that the rational subject is above all else. They estimated too highly of experimental science as the representative of scientific forces, and believed that the power of relying on technology can do everything. They therefore put forward the idea of the “Disenchantment of the World”. According to research, it is the famous German sociologist Max Weber who first proposed the idea of the “Disenchantment of the World.” In fact, the “disenchantment” had already begun during the Enlightenment. Immanuel Kant's famous saying: “Man made legislation for nature”, clearly demonstrates this view position. Weber put forward this statement when introducing one of Christianity's reformed sects, “Calvinism” in in *Protestant Ethics and the Spirit of Capitalism* in 1904 to 1905. He said, “This great historical process of religious development - the magic is eliminated of the World, where it reached its logical end.”²⁶ The Elimination of the World is also translated as “the loss of the world's magic.” Weber specifically interpreted it as, “rejecting the magic of

²⁵Ibid., p. 263.

²⁶Weber [4], p. 79.

the Eucharist as a path to salvation.”²⁷ “The magic of the Eucharist” means that Jesus will give his disciples wine and bread that will symbolize his own blood and flesh during the last supper so that they can be rescued after his martyrdom. Refusing to take part in this religious practice is also “disenchantment.” The translator interprets it as “a very important aspect of Weber’s more extensive rationalization process, where he sums up his philosophy of history.”²⁸ In other words, “disenchantment” is an important aspect of Weber’s rational process, not only confined to religion.

D.R. Griffin, the contemporary American philosopher directly criticized Weber’s view of the “disenchantment of the world” in the article “Peace and Postmodern Paradigm”, advocated some “Reenchantment”. He writes, “Max Weber once pointed out that this kind of world’s Disenchantment is an important feature of the present era, which naturally is seen as a dead thing, it is composed of lifeless objects, there is no divine nature of life in it. This kind of ‘natural death’ leads to a variety of catastrophic consequences.”²⁹ On the contrary, he proposed a Reenchantment of the World, claiming that, “This requires the realization of the Reenchantment of the World, postmodern paradigm will help this ideal”.³⁰ He will have “the Reenchantment of the World” as a theoretical achievement of postmodern paradigm. What does “the Reenchantment of the World” mean? Is it possible to return to the “everything has spirit” in the agricultural society?—of course not.

Rather, we understand it as part of the restoration of the magic, sacredness, and potential aesthetics of nature.

(2) Nature is Magical, Sacred, and Worthy of Fear

This is a matter of intense debate. Someone once raised the idea of “fearing nature” based on the relationship between human beings and nature some time ago. In response, it was strongly opposed by some well-known scientists and humanists, who instead believed that this is to have the relationship between human beings and nature turned upside down. It is only human beings who are great and worthy of fear. The author believes that we should maintain a modest fear of nature, because until now, nature still has some kind of mystery and magic for our human beings, and this phenomenon will continue forever.

When discussing how the universe was generated, Engels used two instances of “do not know” consecutively in the *Dialectics of Nature*. He said, “This much is certain: there was a time when the matter of our island universe had *transformed* a quantity of motion—of what kind we do not yet know—into heat, such that there could be developed from it the solar systems appertaining to (according to Mädler) at least twenty million stars, the gradual extinction of which is likewise certain. How did this transformation take place? he also said: We know just as little as Father Secchi knows whether the future *caput mortuum* of our solar system will once again

²⁷ Ibid., p. 185, note (19).

²⁸ Ibid., pp. 185–186, note (19).

²⁹ Ray Griffin [5], p. 218.

³⁰ Griffin [5], p. 222.

be converted into the raw material of a new solar system.³¹ In fact, how the universe is generated in the end, at present we do not know. Currently the theory about the universe are just hypotheticals about “Nebulae,” “particles,” “the big bang,” and so on. Regarding humankind’s domination of nature, Engels had a very famous saying. He wrote, “We should not be too fascinated by our human victory in nature; for every such victory, nature has retaliated against us.”³²

The development of natural science is also a challenge to the “disenchanted” of nature. The first to be overridden is the scientific determinism represented by the natural mechanics of Isaac Newton. One substantial representative is the French scientist Pierre Simon, marquis de Laplace. He claims in his *Introduction to Probability in Philosophy*: “If a wise man knows all the forces in the universe, knows the locations of all objects, then through ‘the simple calculation’, the future and the past will show in his eyes.” However, this approach to scientific knowledge has been overthrown by modern natural science. In the first place, thermodynamics denies it. Thermodynamics indicates that a liter of gas contained in a sealed container contains tens of billions of atoms. However, it is impossible to know the position of each atom. One can only describe the state by probability theory and statistics. Werner Heisenberg’s uncertainty principle also points out that we can’t know exactly where a particle is and how fast it is moving. Then the meteorologist Hendrik Antoon Lorentz put forward “chaos” theory in 1961, which claims that a very simple system will eventually become unpredictable and contain very complex movements and consequences. This is, the famous “butterfly effect.” A butterfly flapping its wings on the Amazon River can potentially set off a storm in the Mississippi River Basin. “Chaos” theory also pointed out that people can’t know where the solar system or planet will be in one million years’ time.

As for the sanctity of nature, this should also be self-evident. First of all, nature is the mother of humankind. Human beings came from nature, and will finally return to nature. At the same time, nature is also the home of humankind. Humans rely on the natural provisions of sunshine, air, water, and food to survive, and can’t be separated from nature for a moment. Humankind is great, but is small in the face of nature. It is perfectly desirable to maintain a moderate fear of nature.

1.4 We Have Been in the Era of Post-industrial Civilization—The Era of Ecological Civilization

(1) Constructive Postmodernism and Ecological Holism

“Postmodernism” is a concept or paradigm that has been offered up since the 1960s. It has been popular since the 1980s and is still far reaching. Postmodernism’s connotations are extremely rich and complex, but in general, they include “the post-

³¹Engels [6], (Vol. 9), p. 424.

³²Ibid., pp. 559–560.

modernism of deconstruction” and “constructive” postmodernism. The main representative figure of the postmodernism of deconstruction is Derrida, though he does not admit it himself. His theory of deconstruction and has destruction as its focus. However, it does not completely deny everything. Under this premise, we retain certain “scratches.” The opposite of postmodernist deconstructionism is constructive postmodern, one of whose representatives is D.R. Griffin of the United States. This constructive postmodernity is a reflection upon and transcendence of modernity, and includes reflection on the opposition between human beings and nature in modernity. From the reflection of human plundering and controlling nature develops an account of ecological holism. As Griffin says, “the postmodern view produces a spirit that combines the particular concern of human well-being with the consideration of ecology.”³³ He added that “postmodern thought is completely ecological, it provides a philosophical and ideological basis for the lasting insights advocated by the ecological movement.”³⁴ The basis of philosophy and ideology is a rejection of the binary opposition between human beings and nature, and advocacy of an organic, complete philosophy. Thus, constructive postmodernism must contain the advocacy of ecological civilization.

(2) The Arrival of “Anthropocene” and the Era of Ecological Civilization

The first is the advent of the “Anthropocene,” wherein the impact of human activities on the environment has intensified. From a geological point of view, the evolution of the earth is historical. Geologists use the Jurassic, Cretaceous, and other concepts to express stages in the development of life on earth. Many scientists believe that the current Earth has entered a new historical period they call the “Anthropocene.” According to the report of *China Environmental News* on August 31, 2004:

It has been thought that the geological period in which we live should be “Holocene”, which is about ten thousand years after the end of a recent glacial period. However, more and more scientists have begun to gradually accept the theory that the earth has entered another period of development – the “Anthropocene,” during which the human impact on the environment is no less than that of nature itself.

Paul Grutzen, the Nobel Prize winner pointed out at the recent European Science Forum in Stockholm that humans are rapidly changing the physical, chemical, and biological characteristics of the planet on which they live, and the most significant “achievement” of theirs is causing climate change.

At the same time, the leader of the International Plan for Crust and Biosphere Research, Will Steven, believes that the “Anthropocene” and the development of human society in the early quiet environment has a huge difference. The future we will face will be in huge environmental turmoil.

Through the computerized “earth system” simulation experiment, scientists have revealed to humans the importance of protecting our planet from catastrophic changes. According to the computer simulation experiments with the global warming trends further intensified. The Amazon rain forest will disappear, while the Sahara

³³Griffin [5], p. 23.

³⁴Ibid., p. 227.

will become more moist and green. (This latter change will exacerbate the Amazon disaster.) In other words, in the foreseeable future, Amazon and Sahara may swap roles with one another.

Additionally, scientists are also closely watching the North Atlantic circulation, the western Antarctic glaciers, the Asian monsoon, and so on. These changes are due to changes in the Earth's environment prompted by human beings. The marine research professor, Catherine Richardson from Denmark pointed out that the ocean now contains 50% more carbonic acid than that in the air. Ocean acidification will also lead to a lack of marine plants, a lack of animal groups, and even mass extinction, which will accelerate global warming.

The "Anthropocene" era means that human beings should reflect and change their behavior, or they will be destroyed. At the same time, after the 1960s, humans began to enter the post-industrial era. In summary this era can be referred to as the information age, the knowledge economy era, etc. Recently it was also summarized as an era of ecological civilization. *Guangming Daily* published a paper "On Ecological Civilization," on April 30, 2004 which pointed out, "At present, human civilization is in the transition from industrial civilization to an ecological civilization stage," and that, "ecological civilization is a new stage of human civilization development, a form of human civilization that comes after the industrial revolution." In 1972, the promulgation of the United Nations *Declaration on the Human Environment* had marked the entry of humankind into the era of ecological civilization. China has also recently put forward the construction of "ecological civilization" to add to the three other types of civilization, including material civilization, spiritual civilization, and political civilization. In fact, China's current scientific development includes harmonious society goals, a concept of being "people-oriented," the sustainable development of the economy, "building an environment-friendly society," and other principles. In a sense, these are also a reflection of industrial civilization and transcendence, marking the establishment of a new ecological civilization.

(3) Towards Ecological Modernization

History tells us that the development of contemporary ecological theory has gone through three stages:

The first stage, occurred during the 20th century, and lasted for about 60–70 years. This stage refers to the sudden environmental problems and the awakening of human beings that it led to. With *Silent Spring*, *Limits to Growth* and other works published as a symbol of this stage, questions began to arise and were reflected upon. However, there have been cases of going too far, including such erroneous trends as "anti-modernization," "anti-industrialization," "anti-productive forces," and "anti-technology." Some even propose going back to the Middle Ages, which is not only wrong, but also unrealistic and does not work. Some people exaggerate that the happiness of our present life is not necessarily better than the medieval peasants in the United Kingdom, which is an attitude far removed real life. In fact, most of human rural life has been very hard, and has not improved until recent years. Additionally, the very low productivity of the Middle Ages cannot be ignored. Therefore, we should remain cool and calm regarding the ecological environment.

The second stage came after the 1980s with the idea of development and environmental synchronization being put forward. The idea of economic growth and environmental pressure is inversely proportional, this is the “ecological modernization” theory put forward by the German scholar Huber. Ecological modernization refers to a mutually beneficial coupling of modernization and the natural environment, and can be understood as the ecological transformation of the world’s modernization. Europe, the United States and other developed countries have generally done this. They basically realized that economic growth rate exceeds the pressure of environmental growth.

The third stage refers to developing countries represented by China, who are on the road of ecological modernization. China is in a situation of rapid economic growth, and in the process of modernization. However, China is also taking the road of ecological modernization. In other words, besides the four areas of modernization of “industrial, agricultural, national defense, science and technology,” there is a fifth, “ecological modernization.” This goal is planned to be achieved in 2050 or so, so that China’s economic development and environmental degradation can be completely decoupled, thereby ensuring that the habitat and environment fully meet the standard of the major developed countries.

To guarantee ecological modernization, one must construct an advanced ecological culture. Culture is the leader, supporter, and guarantor of ecological modernization, which is in need of an advanced ecological culture to pilot, support, and guarantee itself. *Limits to Growth* tells us that “the world is not a destined future, but a choice”.³⁵ Choice is a kind of attitude, a kind of values, a culture. We should advocate an “aesthetic attitude towards nature,” and a cultural attitude of “enough is enough” instead of the wrong attitude that treats nature as an enemy,—“the more the better.” Therefore, we must not only adjust the development model, but also construct ecological culture, including ecological philosophy, ecological ethics, ecological economics, ecological sociology, and ecological aesthetics. Ecological culture is an advanced culture in line with the direction of social development, and the development of ecological culture is where our responsibility lies.

1.5 The Realistic Urgency of Ecological Civilization Construction in China

(1) China as a resource-constrained country is facing increasing environmental and resource pressures

In the past, there have been discussions of China’s “vast territory and abundant resources.” In fact, China’s environmental resources have sustained unprecedented pressure which becomes the “bottleneck” of China’s modernization. China’s 1.3 billion population accounts for 1/5 of the world’s population, with a forest coverage

³⁵Meadows, etc [3], p. 262.

rate of only 20%. This does not reach the level of the world's per capita average. China's national per capita of fresh water is 1/4 of the world's per capita. The North only has 1/18, while Shandong is 1/10. China's desertification land is equivalent to 14 Guangdong provinces, and also showing a growing trend. China's ecological footprint is limited.

China's basic contradiction, according to the summary of some authoritative statesmen, apart from the contradiction between the growing material and cultural needs of the people and the backwardness of productive forces, is one between the growing material and cultural needs of the people and the environment, ecology, and resources.

(2) Recently, China's environmental problems have become increasingly serious, directly threatening the success of modernization and the survival of the people

Over the past 30 years, China has implemented a large-scale modernization cause. The country is prosperous. The people are rich, and have made great progress. But China has also paid a huge environmental cost, and its environmental problems have become more and more serious. On December 21, 2007 *Guangming Daily* reported:

According to authoritative statistics, China's annual environmental pollution caused by the economy accounted for the proportion of GDP is very alarming. Authoritative people point out more profoundly that the Environmental Problems in the developed capitalist Countries in the past hundred years occurred in China in 20 years suddenly. Accidents are frequent, and the problem is serious. Due to the impact of the development model, China has not properly accepted the transfer of environmental pollution in developed countries. To a certain extent, there should be more emphasis on the seriousness of environmental problems.

According to the *New York Times* report, China Handan Iron and Steel Plant introduced Germany's Ruhr iron and steel making equipment from the late 1990s, improving steel production by leaps and bounds. Now, China's steel production has more than that of Germany, Japan, and the United States combined steel production. However, with the transfer of this equipment, environmental pollution has also been transferred. Ruhr was a high pollution area. If you wear a white shirt in the morning, it will turn gray at night. But now the Ruhr people in Germany are in exchange for clear water and blue sky. In contrast, Handan in China has a serious problem of environmental pollution. The residents living in the west side of Handan City have been living in dusty smoke, containing carcinogenic substances in the gas.³⁶ A village in central Shandong is also the so-called "cancer village," as the incidence of esophageal cancer is extremely high because the village is close to the Dawen River polluted by the nearby city of industrial and mining enterprises. Now, young adults and children have been transferred out of the village. Only the elderly stay there and helplessly wait for fate to come. At present, there are some "cancer villages" similar to this in China. This situation shows that serious environmental problems not only directly threaten the success of the country's modernization, but also is a direct threat to people's lives and health.

³⁶Quoted from the *Reference Message* December 22, 2007 "World Factory is also the world chimney."

(3) The problems of resources and environment directly contradict the goal of the great rejuvenation of the Chinese nation and the development policy of a “people-oriented” in China

In recent years, China’s average annual growth is about 10%, but if you get rid of the economic losses caused by environmental pollution, the growth rate is very small. Practice has proved that the path of “post-pollution control” is impractical because it will pay a much higher price. It will not only pay an economic price, but also will pay the price of people’s health, good life, and even lives. This is contradictory to the “people-oriented” approach in China’s scientific development. The United Nations stipulates that environmental rights are also a human right, and everyone has the right to live with dignity in a beautiful environment.

Imagine if there is no clean drinking water: we would all go crazy to grab a small amount of mineral water or rush around for a bucket of water. Would people in this way live with dignity? When we are closed upstairs by “SARS” virus, only to get a little life supplies in the window through the basket, will we be living with dignity? In this case, can we take the kind of arrogant, conqueror’s attitude to nature, or can we be moderately fearful of nature? That is to say, when a quantity increases in proportion to its existing one, it grows exponentially. For example, depositing \$100 in a bank will increase to \$107 in the first year at a 7% interest rate. The growth rate in the second year is 7% of \$107, or \$7.49. By the tenth year, it will grow to \$196.72, almost doubled. If you put \$100 in a jar, and invest \$7 per year, then after 10 years, it will be \$149. This is linear growth. By the end of the fifth decade, the money in the bank account will be 6.5 times more than in the jar, almost \$2,500. According to the authors of *Limits to Growth*, the population growth of underdeveloped cities has grown exponentially over the past half century, and the population has doubled in 19 years. The population of industrialized areas has grown linearly and is relatively flat. For the exponential growth of the population, there is a real problem before us. That is to say, under a certain ecological footprint, is there limit to the growth of human needs and land ratio, and where is this limit?

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