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The Natural History Approach to Maintaining Ecological Balance

Liu Huajie*

Abstract: The present ecological imbalance is due to human beings' unrestrained desires and their actions of developing multifarious strong forces in order to conquer nature. Present science and technology and institutional arrangement still follow the old-fashioned premises. According to *Tao Te Ching*, nature and the natural process are sacred. The concept of Anthropocene and the idea of unpredictability from complexity science remind us that it is necessary to revive the old tradition of natural history, which is interesting enough and helps to maintain the ecological balance.

Keywords: Anthropocene; natural approach; ecological balance

The bio-system on earth is the result of long term natural evolution. Before humans existed, and long after its existence, no other single species could affect the ecological balance. During the past two centuries, however, things have gone downhill. During the natural evolution of our environment there have been some truly cruel times: five mass extinctions, for example (Kolbert, 2015, p. 3). But these took place in the ancient past and were caused by inorganic actions such as meteors and volcanoes. Geology ruled then. The power of organic world then could not be paralleled to that of the geology, thus not leading to grave consequences.

1. The birth of the Anthropocene

Because of evolving intelligence, humans have gradually came to the fore,

* Li Qiang, professor, Tsinghua University.

Ge Yanxia, assistant researcher, National Institute of Social Development, Chinese Academy of Social Sciences.

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exerting influences to the ecosystem as powerful as volcanoes, earthquakes and tsunamis. Paul Jozef Crutzen, winner of the Nobel Prize in chemistry, based on human influences on geology and ecology, put forward in 2000 that the year 1950 was the starting point of the Anthropocene (Zalasiewicz, Williams, Steffen & Crutzen, 2010). In the past, scholars consisting of naturalists and geologists, described geologic ages with the help of stratigraphy set up working groups for determining geological stages and stratigraphic, Erathem, ages. The Anthropocene Working Group, which studies our present time, requires botanists, zoologists, atmospheric researchers and marine scientists in addition to geologists. Philosophers and naturalists also play an important role. Independent scholars like James Lovelock are also crucial to the team. The Gaia Hypothesis proposed by Lovelock (2007) finally turned from pseudoscience into real science. Lovelock himself thus (Lovelock, 1979, 2000) transformed from a “crank” into an independent scientist.

Ero of the geological stages also consists of Period. Period consists of Epoch. Epoch consists of Age and Age consists of Chron. From the perspective of a specie’s evolution process, the Anthropocene Epoch preliminarily initiated three thousand years ago and actually started around the 1860s, at the beginning of the Industrial Revolution. Previously, human history accords with Anthropocene Age I (AA I for short, parallel to the primitive period). We, at present, are in Anthropocene Age II (AA II, the galloping period under rational calculation) and this period is expected to last until around 2060. Afterwards, Anthropocene Age III, (AA III, a period for adjustment) that is expected to last until approximately 2560. If everything goes well, or human beings are lucky, we will then enter Anthropocene Age IV (AA IV, a period to return to nature). Of course, all these descriptions are based on

speculation.

The concept of Anthropocene is formulated by the growing of human power, not intelligently, but brutally. Harry Collins (1994), the sociologist of science, and other scholars once referred to the present science as the Golem, which is “a powerful creature, not evil, but dangerous because it is clumsy”. It is also correct to describe the present human power. Human beings keep developing ways to be stronger, but we have not yet been restrained. We are better able to improve our speed and capacity to be strong than to control our improved speed and capacity. Right now, terrorism and the DPRK's Nuclear Issue are just the tip of the iceberg, an example of human beings fretting in our own grease.

Natural history will help people to view the Anthropocene from a broad perspective. People living in the time of the AA II Age do not appreciate natural history. The mainstream and standard education now is anti-natural history and anti-nature.

2. Misunderstandings over scientific calculations and new technologies

Publicity for environmental protection is usually fair, but its preconditions are potently made without much reflection. For instance, the consequences may include; over reliance on natural science innovation and R&D in new technologies, exclusive concentration on universal knowledge and small scale calculation, disdaining traditional wisdom, a contempt for emotions and values, an ignorance of home dependence and a numbness for environmental destruction.

In April 2017, I delivered a speech at Beijing Forestry University. During the Q&A session, a science student stood up and objected to my words saying, “You said it may take China several dozen years to deal with smog, but I do not think so. Things now are different from the past. Science and

technology in China is rather developed. We boast late-mover advantage, so it will not take so much time!" I then explained to him, "Everybody hopes to see a blue sky tomorrow, not one blown by the wind. That is a nice dream. 'Late-mover advantage' is just a possibility. The already polluted China does not provide people with this advantage. After hearing your words, I'm afraid it may take a much longer time!" The reason for my words is that we should not be blindly convinced that new technologies can solve problems effectively.

In modern society, the root cause of environmental and ecological problems arises exactly from the restrictions on scientific methodology, and from the incompatible nature-human systems derived from the excessively fast development of science (Xiao, 2017). The arrogance of science can only delay the process of governing the environment. The default configuration is that the usage of X results in problem A, so people tend to believe that with more and better X, A will be eradicated. The development of new X may have weakened or eradicated A, but gives rise to new problems like B, or the unclarified problems like C or D. During the promotion of X, the society expedites its development and the demand of natural resources increases ceaselessly. Overall, the living pressures for both individuals and groups are mounting, their sense of happiness has not been elevated, and their space for long-term subsistence has been squeezed. From the economic perspective, it costs a lot to eradicate adverse impacts, because of the "Asymmetrical principle of technology costs" (Liu, 2016, pp. 165-168). Scientismists would never agree with the above thoughts. If science is supposed to be right, good and correct, then to be skeptical about science is to be irrational and to be against the truth. In today's academic circles, however, realism, essentialism, scientism, and quotes like "good things all belong to science" (a sarcasm made by Tiansong), "With science in hand, no fear at heart" are not so

popular.

Since some people used to be so anti-science (it is a label put on them by others), then, how do people view ecology? As a branch of science, may ecology not be regarded as bad or helpful to protect the ecology? According to Paul Lawrence Farber's historical narration in *Finding Order in Nature*, since the mid-1700s, didn't natural history also be "transformed into a scientific discipline"? If something is wrong with science, then how did natural history survive?

This is indeed a sharp question. Then, how to achieve logic consistency when making an argument? As a matter of fact, it calls for analysis of historical processes to provide consistent explanations and articulate discussions on the evolution and characters of quite a number of disciplines. Here, I'd like to first elaborate on ecology, then natural history.

As environmental and ecological problems kept popping up, the disciplines of ecology and ecological engineering were officially initiated. Recently, sustainable development and ecological civilization have been advocated. Nature per se does not need ecology, because nature functions in a normal way. Ecology is created by human beings to serve themselves. To be specific, ecology tends to clean up the messy situations created by people's inappropriate behaviors. To publicize the ecology and ecological civilization is to protect nature. But strictly speaking, this is not accurate because it is peoples' unnatural and immoral behaviors that have hindered the development of other species and inorganic world. To put it in a harsh way, if human beings go extinct, ecological problems will be naturally solved! Such idea, however, could be seen as anti-human and anti-civilization.

Long before modern society, everything in nature ran well. Nothing was wrong with the ecology or society before the Industrial Revolution, despite all the desolation and poverty. "Running well" means

that things run naturally, where wind, rain, thunder, earthquake, volcano and mudslide are all common natural phenomenon. Their recurrence is not a sign of a troubled environment. An unnatural society causes ecological problems, even though the goods provided by the manufacturers seem fertile and people seem rather rich. An average family in Beijing is estimated to own an asset of several million yuan. But things will be different if the real estate is excluded from the calculation. Problems may be fraught with unnatural things. Natural things are usually in contrast to, or even opposite to artificial ones. Without artificial things, however, civilization will not exist. Based on John Stuart Mill's argument, whatever artificial seems unnatural, so that from its beginning, human civilization was unnatural! During the revolution, the more advanced the civilization is, the more unnatural it will be. If being natural or not is set as the criterion, then a civilization should end up uncivilized and are the most civilized behaviors actually the most uncivilized ones? There is surely a paradox here. Previously, the civilized discourse system and the natural discourse system were two separate things with distinctive expressions. Now, they tend to collide, so the conflict is becoming more and more evident.

The relation between civilization and ecology is close to that between civilization and nature. Their relations cannot be straightened out without dialectical thinking. Civilization is anti-nature indeed, but it has a limit. To a certain extent, anti-nature may become the opposite of nature: civilization may turn into non-civilization.

Ecological destruction is only one of the problems resulting from the rapid development of our species. The reason why this problem is tricky is that it endangers humans sustainable subsistence: it is not only detrimental to people themselves, it first hurt other species, lands, mountains, rivers, lakes and oceans, basically all of nature along with people.

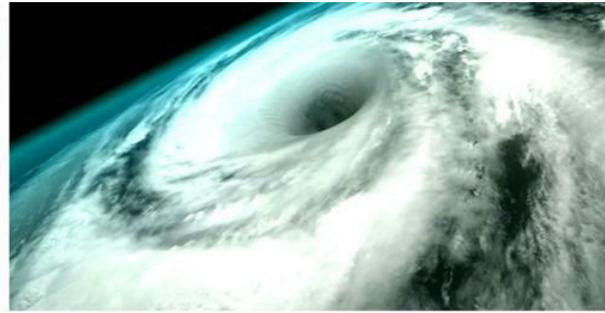
Different civilizations are anti-nature to various degrees, so we need to be quite vigilant to the behaviors that call for "advancing civilization". The speed that a civilization advances should be limited and capped. If there is an ultimate lifespan for the world's evolution and human society's development, such as three hundred years, one thousand years, or one million years, then these questions are easier to be discussed. At present, one of the difficulties for discussion is that we all know there is a limit (any real system must come to an end), but we do not know how limited the order of magnitude and the rough scale may be. I have mentioned the concept "duration", but how long can be called "duration"?

To know a future event in advance is called forecasting in science (or prophecy in witchcraft or pseudoscience). To know about a system in advance, we should rely on computations. To calculate and speculate is one's skill. Calculations seem to vary a lot from computations. The latter seems rather classy, as a project implemented by scientists, while the former is the little trick played by philistines and unscrupulous merchants. But in fact, the two have no fundamental differences. Both should rely on speculation and valuation. Speculation is hard, and so is valuation. In the past, when villagers lost their poultry, they might pay a blind person (no offence) in their village a few cents to count this event on his or her fingers. Such counting is forecasting! Blind people are respected in a village, and they are always eloquent. They will give vivid analysis and answers to every incident. For example, they may tell you, "Your duck is heading towards the east. Well, it is not lost. Within three days, it must turn back from the south." This is quite a precise explanation. In Karl Popper's words, such judgment is quite high in its falsifiability, not as the monk, who stretched out one finger and said that three people would pass the provincial civil service examination. Some may put it in an ambiguous way. For instance, as Zhao Shuli,

a Chinese writer wrote in his *Xiao Erhei's Marriage*: "Everything now is fraught with danger. I'm afraid the duck is lost." Blind people gain the respect because their forecast will be successful soon or later. They make mistakes all the time, or turn things upside down sometimes, but whoever pays them always lets it go afterwards. If blind people were right, they will then be popular among villagers; if they were wrong, people usually forget about it and life just goes on. No one will say anything bad about the blind. The authority of the blind will never be threatened. Why? It is because such authority is not established by individual events, but the long-term social and historical atmosphere. It is a basic belief for the villagers. When I was a little boy, I did not believe in this and I kept wondering why those who took such an occupation were blind. Although some people answered the question for me, I have not yet been satisfied with the answers. After I started to learn philosophy and sociology of science, especially sociology of scientific knowledge and Michel Foucault's theory, it suddenly came upon me that blind people are playing the same role as scientists, even though their specific knowledge, means and arguments vary greatly. Scientists, or scientific researchers in a broader sense, are playing a significant role in modern society. They also do the counting work (or to be serious, calculations and speculations). Sometimes, they do things correctly and accurately (such as a perpetual calendar and eclipses). But they sometimes get things wrong. The scientific circle admits openly and reluctantly, "Science allows for failure. Science is not always right, but..." actually, what's after "but" is most important, and they are usually as follows: "we hope you do not look down on or distrust science, but believe in science and support and fund science." All this comes out naturally, which agrees with modern logic. Those who dare to doubt the process must fight against modern logic.

We are in an information age in the 21st century. Computation is an important tool supporting this age. Everything needs to be calculated and computerized. So-called big data should also be based on computation. The speed of the computers is accelerated. What's interesting is that it is the computers made by Chinese scientists that boast the fastest speed. With such a speed, why do there occur the worrisome environmental pollution and ecological problems? I can imagine that scientists will give a righteous answer, "That's because no one invited us to be the leader-in-chief!" When I studied in grad school in the 1980s, I heard a prestigious scientist complain for several times right in front of me that he wished to establish the general designing department for reform and opening up. According to the legitimate logic of the evolution theory, all creatures are objectively adapting to the world. Although living creatures can predict (this is not only true of humans, since animals can predict when preying), they cannot calculate too well, nor get prepared ahead of time. The previous simplicity of science set no limits on human presumptions, but complex science has already rectified this unrealistic view. In terms of complexity, human behaviors cannot distance humans from the animal world. As the complex systems are nonlinear, it is impossible for people to forecast the long-range development of systems. This negative theory cannot lower our capacity (such as to understand the limit of the light speed and Heisenberg's uncertainty principle), but can help us to know that we are just an ordinary species in nature, not gods. Furthermore, this also implies that people should not pretend to be gods.

Man proposes and heaven (god) disposes. To transform nature needs to be cautious. Since humans can never be as wise as nature, then will it be rather depressing and defeating to be on earth? In fact, it is useless to be so pessimistic and gloomy. If we resort to appropriate ways, the computations based on



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normal desires and transformations in nature will not cause environmental and ecological problems. The problems now are that people do not prevent risks, lack symbiosis consciousness, and are reluctant to control their desires, but are opportunistic and take advantage of others for their own merit. This is true in all countries' scientific strategies and institutional arrangements, so there is no solution for ecological equilibrium.

To count on others and protect oneself and to weaken potential enemies and strengthen oneself is the secret for surviving in the competition of today's world. So are the goals for the publicity and communication of science: to equip science-followers

with intelligence and make them come to the fore. This, however, is just a general rule for certain historical period. Scholars and the political circle can raise their awareness and the original scenario can be shredded. The three models for science communication can be extended, adding the "global ecological system model", so that super-nationalist interests can be taken into account, but to establish this fourth major body will be a task (Liu, 2011). Such a vision may be based on an absolute belief in human logic and symbiosis. Those who haggle over every ounce may become the victim of their own ingenuity. We need to constantly review Lao Tzu's lectures:

There are those who will conquer the world

And make of it (what they conceive or desire).

I see that they will not succeed.

(For) the world is God's own Vessel

It cannot be made (by human interference).

He who makes it spoils it.

He who holds it loses it.

For: Some things go forward,

Some things follow behind;

Some blow hot,

And some blow cold;

Some are strong,

And some are weak;

Some may break,

And some may fall.

Hence the Sage eschews excess, eschews extravagance,

Eschews pride (Chapter 29 of Tao Te Ching).

It is notable that according to Lao Tzu, the whole world is a panacea as it is “God’s own Vessel”, and the normal evolution of nature is also a panacea. No matter how amazing artifacts and manpower are, they are just small tricks, not a panacea. High-tech cannot be self-assumed as a panacea. Purely admiring artifacts but neglecting nature is a worship of “machinery,” a strong hint foreshadowing later ecological disasters.

3. The natural history approach

Discovering Birds and *Finding Order in Nature* written by Paul Lawrence Farber are great works on the history of science. These two books played an important role by unveiling natural history achievements and culture in the history of science. It has been mentioned in both books that natural history has turned into science through its endeavor of professionalism. This has been regarded as the ultimate recognition of natural history. We have to be soberly aware of the “praise.” During its long

development, natural history has brought about multiple scientific disciplines such as ornithology, ichthyology, geology, ethology, plant taxonomy, ecology, biogeography, etc. From this perspective, natural history resembles philosophy, which, in the past, nurtured various disciplines, like physics, cosmology, mechanics, chemistry, logistics, psychology, brain science, artificial intelligence, etc.

Philosophy is constantly divided, but it is still there. Philosophy is still listed as a standard discipline. People may vary in their views on the importance of philosophy, but almost nobody appeals that philosophy should be excluded from education and research. In contrast, natural history is far from lucky. After natural history was divided and specialized, the newly established disciplines have together replaced their “parenting mother”. Institutions of higher learning and research centers do not attach importance to natural history. Furthermore, whoever holds high the banner of natural history is seeking troubles for themselves, because to some people, natural history represents superficiality and the past. If a professor from a School of Life Science is said to be a naturalist, he or she is somewhat disdained or humiliated. Only certain people with high self-confidence like Aldo Leopold, Edward O. Wilson and Rachel Carson dare to claim themselves as naturalists. The title of Wilson’s autobiography is called *Naturalist*. For the Chinese version, the title has been translated as *The Hunter of Nature*.

Doctor Yu Dianli of the Commercial Press points out in a paper that nature is the mother of human beings, the teacher of human beings, and human beings themselves. To examine ourselves for what we’ve done to nature should become normal for human beings and a compulsory class taught by nature. Only through unremittingly learning through this compulsory class can human beings really become a reasonable species. In this way,

the humans can remain advanced and ensure their long-term existence. Natural history could be the start of humans' introspection (Yu, 2017). Besides probing nature, natural history also reflects on itself, wondering what the short-term and long-term effects of natural historical activities are. Compared with other natural sciences, natural history is "shallow" and lacks power, but all these cons constitute its pros, founding an important basis for reviving natural history. Natural history is shallow, so it cares about feelings and horizontal ties, and it has not yet been separated from the "living world." It also lacks power, so it is not a "devastative knowledge," causing rather slight impacts on the human-earth system. Following the tradition of natural history, we cannot create atomic weapons or chemical weapons, and neither can we create a monster like Hulk (Liu, 2016, p. 22). Phenomenology, proposed by Edmund Gustav Albrecht Husserl, focuses on the "living world," but the scholars hold contentious views towards it, in detail and in abstract, or for simplicity and on reflection (You, 2016). In my opinion: first, Husserl's own understanding is one thing and the inspiration others got from his works is another thing. Both are rational and interesting; second, I agree that Husserl himself took a holistic view combining these two aspects, and he must have first advocated a detailed and simple living world. But the philosophical exploration cannot come to a halt. The phenomenology of Husserl contains transcendentalism and inter-subjectivity, which seem opposite to each other. With both these characters together, a person can be both unworldly and mundane. If one lives in a transcendental world, then he or she can only be unworldly and cannot return to the ordinary world. Discussions about inter-subjectivity, however, concentrate on human society and daily life. The natural science crisis upholding objectivity is manifested as the betrayal and oblivion of human beings' vivid and subjective world.

Now, to revive research in natural history has taken an initial shape. The publishing industry assumes great responsibility and has a hunch for business. However, too much emphasis on commercialization may devastate this once-in-a-lifetime opportunity. I came to learn about the natural historical traditions of the natural science in the 1990s, and wrote the biography of B. B. Mandelbrot, the fractal artist, with a title of *Mandelbrot: Walking Through Natural Historical Tradition* (Liu, 1998), for the tenth volume of the Science Giants. This article has been included in the book *In the Name of Science* (Liu, 2000). Later on, scholars tended to view natural history from the perspectives of philosophy of science, history of science, historiography of science and the building of ecological civilization, so they began to advocate reviving natural history in the new era. Some people misunderstood and believed that we would offer a new subject in colleges and universities, so that natural history may be further approved by the Ministry of Education. Others believe that we once planned to add a new compulsory natural history course for primary and middle school students and they must take it and pass the exams. But those are not my intentions. In modern society, it is a basic fact that natural history is declining. Such a fact cannot be easily changed. To revive natural history, we cannot move other people's cheese, nor add to students' burdens.

To revive natural history is not to follow the previous natural history approach, but to actively construct a new way. To construct the future is easy to understand, but we are also constructing the past! We can view different historical sights if we integrate distinctive values in our historical research. Whether to write about the past or the future for natural history, the construction theory should be more critical than the theory of reflection. What's more important is about the range of construction. Scientific historians and philosophers of science

always place science in the core. Even though we sympathize with natural history, we are more likely to compare natural history to science to place its value. I used to hold such an opinion, but after I stepped out of scientism, I no longer see things that way. In *The Romance of Victorian Natural History*, L.L. Merrill (1989) points out that “in the academic world, natural history is a weird orphan. There is no status for natural history in literature, and it gets little respect in scientific documents” (p. 9). Actually, the cultural value of natural history is not limited as it is transforming into science. The soft attractiveness of the Victorian natural history lasts. The natural historical discourse derived then is still a powerful and imaginable way for people to express their pleasure of the world. Then, what is natural history and what is its significance? There are two distinctive ways, genealogy and essentialism, to interpret such questions. I am against the way of essentialism and I listed my reasons in an article in *China Reading Weekly* (Liu, 2015). If we break through the barriers of essentialism and emancipate our minds, we are more likely to embrace the new picture: throughout history, natural history existed and developed parallel with natural science. Since 2016, I’ve reported the “parallel theory” in different speeches, including the Third China Nature Education Forum (titled “Natural History, Parallel to Science”) held in Shenzhen and the lectures produced by in the Chinese Academy of Sciences. I also published a paper in *Frontiers*, elaborating on the new “orientation” of natural history: “natural history has been neglected for too long, and now there has been a sign of revival. People are still used to regarding it in the big picture of science and popularization of science. To some degree, this makes sense, but it also poses many disadvantages. An inspirational orientation is that against the backdrop of building an ecological civilization, we tend to understand natural history as an old cultural tradition that is parallel to natural

science. Such parallelism is more corresponding to historical data and more beneficial to ordinary people’s engagement, so that natural history may better serve ecological civilization” (Liu, 2017). Based on parallelism, the significance of elucidating natural history should not rely solely on natural science. In the two books of Farber, an historian of science, some sort of tension has been shown. In narrating that natural history has been converted into science, he expressed his pity for the decline of natural history, but he still recognized the role civil natural history plays in bringing about happiness to people and protecting the ecology.

At present, the public needs natural history, but ordinary people cannot have an understanding of the history and culture for natural history as deep as scholars. Therefore, ordinary people desire to know the outline and mechanics of natural history. To publicize the culture, we can summarize four main aspects of natural history as BOWU, the *pinyin* of natural history in Chinese: B means beauty. Great beauty exists in nature, and the nature is aesthetically good (a new concept of environmental aesthetics). One major impetus driving me to do natural historical research is to appreciate the beauty of nature. O represents observation. To detect the nuances and details in life, we should not solely rely on the scientists’ observations and experiments. What’s more important is that people should perceive and make judgments on their own instead of learning from others, known as “personal knowing.” W means wonder. If one is childish and innocent, he or she is then intelligent and wise, so “with a child inside, one can easily fulfill their ambitions.” U shows understanding. The pursuit of understanding focuses on mutual benefit. Therefore, we should always bear in mind that we human beings sustain our existence by relying on, rather than bullying nature. Apparently, these four aspects are not comprehensive, nor do they satisfy the “dual non-principle.” Both in

terms of form and logic, they are not sufficient or necessary conditions (Liu, 2007, pp. 102-106), but they have revealed the distinctive character of natural history. The emphasis on beauty, feelings and ethics makes it different from the current natural science. From this perspective, natural history is not a simple modernized discipline or science, so it is not suitable to be forged into a serious science. If we just view natural history from its potential contributions to science, then both the scale and scope are limited.

Apart from meeting the needs for people's daily lives, natural history also poses academic needs, which is instructional for curbing the fractional tendency of academic developments. For humanists and scientists, it is not bad for them to know something about the time-honored natural historical traditions. At least they can be aware that ecology and conservation biology are both derived from natural history, however, many scholars do not know about its history. Throughout history, natural history was matched with social background, and its active degree was highly socially connected. Before 1976, the classic, *The Naturalist in Britain* written by D. E. Allen (1976), and *The Golden Heyday of Natural History* by L. Barber (1980) are clear signs. Today, scholars again notice the necessity and possibility of restarting ancient natural historical traditions in cases of environmental protection and ecological research, after natural history and its inquiry went downhill. According to some experts, the popularization of new ways and tools such as genomics, stable isotopes and meta-analysis is not good things in the long run. The field work for taxonomy and natural history is more time-consuming, troublesome and complicated than the fancy data mining and modeling. Propelled by new trends, the ecology derived from natural history, taxonomy and experience survey swarm to pursue quick returns, when, no tangible benefits can be made from ecological research. Such trends not only make it more difficult for the scholars working

diligently in the fields to publish papers, and reduce the quoted rate of their papers as well. This indeed leads to a loss of the cultural basis for ecological research (Lindenmayer & Likens, 2011). It is true that some ecological protection actions are actually anti-ecological. To some extent, some scientific EIA (Environmental Impact Assessment) has been reduced to "licensing of the pollutants". Some ecological graduate students and ecological engineers have even forgotten about their original intentions, knowing nothing about Thoreau and Leopold.

Sometimes, people ask, "I agree with the natural history approach, but isn't natural history so gentle or naive that there are no fundamental challenges to satisfy people's inquisitive curiosity?" This is indeed a good question. Humans boast great curiosity. To some extent, to deny curiosity is to deny human nature. However, natural history does not exclude curiosity, but places emphasis on the feelings of surprise as mentioned above. Natural history is so vast, vast enough for people to awaken and demonstrate their curiosity. But curiosity and surprise are both limited and need to be guided. There is also a saying called, "Curiosity killed the cat" in western cultures. Where is the limit? It is not usual for people to set boundaries ahead of time, but as reasonable creatures, we can always set preconditions and restrictions. The transition from rationality to irrationality is sometimes smooth.

It is undeniable that to revive natural history, we must consider problems in terms of society and its values, not just set up a discipline for knowledge. Current society is not in lack of knowledge, for to be exact, knowledge is spreading unchecked. To revive natural history, we need to consider the following crucial factors: to pursue sustainable existence, to appreciate the beauty of nature and to protect the ecological environment. To achieve an ecological civilization, there are great difficulties. Original natural history can barely meet the needs,

so the discipline should advance with the times and maintain its own features. To follow in the tradition and assume slow development, the new natural history should strike a balance between natural science and the humanities. The concept of “Transhierarchy” which I proposed for discussing the evolution of scientific methodology is also applicable in the development of natural history (Liu, 1997). Well, at that time, I was still a scientismist. To conduct the second phase of cultural research of natural history, we need to make innovations in the theories and methods of historiography. The related reflections can be summarized as the following four steps: first, to zoom. This step derives from photography, and this can also be zoomed like reading digital maps, so that the relative location, depth of focus and the surrounding “landform” of the object in the macro field may be detected. In 1983, A. Rupert Hall published an article on *The History of Science*, using the concept of a “zoom microscope”. The second step is “transhierarchy”. The boundaries of subjects under discussion are not clear-cut, so researchers need to step over multiple disciplinary boundaries and mobilize approaches and resources for the subject to draw circles and to break through circles. The third step is to surpass levels. We need to cut through levels, so that all the contents may be straightened out and restored. The relative macro phenomenon can be illustrated by the elements of the next layer. The second and third approaches combined may provide a time-space framework, conducive to clarifying characters and status. The fourth step is to assign. Guided by historiography, with multiple considerations, we can assign values to the target phenomenon and objects to elaborate on their significance. The above four steps do not constitute an objective stripping, clarifying or restoring, but a process of permeating values of law. Academics may not go downhill because of the permeation of the principal body, but scholars

may thus be able to discern the right from the wrong and pursue lofty undertakings. Such an approach is also compatible to Marxist epistemology and social constructivism.

René Descartes, the father of modern western philosophy, once said “I think therefore I am”. By applying the sentence structure, I can say that “I study natural history therefore I am” (Liu, 2016, pp. 80-87). From the perspective of Marxism, “I think” ranks second, while life experiences, production experiences and the economic base still rank first. “I think” bears important relations to “I am,” so Descartes’ proposition confirmed human beings’ ability and rationality as being outstanding, mystical and virtual. Husserl, however, reflected on the approaches proposed by Galileo and Descartes as well as their ensuing and unrestricted “I think”. Nuclear power, new materials, artificial intelligence and genetic modification all extend human capacities, but also prolong the control of humans against nature and themselves, causing infinite risks for the environment and human systems. The propositions of “I study natural history” and “I am” do not concentrate on thoughts, nor mean that there are no thoughts involved. Natural history is an interactive physical and mental activity involving both objective and subjective players. It first focuses on our feeling, recognition and the direct application of nature, rather than transformation! A successful development of natural history could be a pillar of “I am,” or good for a longer existence of the natural environment and human systems as it follows the regulations of nature (Liu, 2013). To put it simply, the speed and strength of dichotomy both exert values. The problem of modernity is that it always stresses one side, leading to lopsided and absurd prejudices. To introduce a natural history approach will not change the whole picture in the short run, but its rationality is perceptible, because before and in the early development of modernity, natural history was

a noted school of thought worthy of testing.

Nowadays, supermen and high-tech cannot rescue ecology, but can probably continue the ancient traditions, slow down the rhythm of development and life, and delay the meltdown. This whole process is like driving: we need to slow down

when there is risk, and then we can go on thinking about the next step. The logic behind modernity is to speed up society so that people cannot relax. Gandhi once said, “There is more to life than increasing its speed”. It is not easy to master the sense behind the quote.

(Translator: Liu Yufei; Editor: Xiong Xianwei)

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