Pro-Environmental Behaviors, and Schrödinger's Cat Quantum Thought Experiment

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Received date: 15 Mar 2026 Accepted date: 10 Apr 2026 Release date: 14 Apr 2026

Abstract

The purpose of this research is to explore how environmental knowledge and facts lead to responsible, pro-environmental behaviors which is the life of a biotic community. Specifically, it seeks to investigate what concrete content is possible regarding active, intrinsic values that possess the inherent goodness of nature itself but depend on human consciousness rather than the human utility emphasized in environmental education and how these should be conveyed to environmental learners. Above all, it seeks to identify what constitutes responsible behaviors, which is the ultimate goal.

The research methodology is based on intrinsic aesthetic values, which encompass not only rational intrinsic values that disregard existing experience but also experience-centered emotional and active values. It is structured to call for responsible behavior through human duty judgments toward nature, based on the correlation between values and duties and ecological responsibility, in order to realize such aesthetic values. Through the application of this research, based on the Schrodinger's cat quantum thought experiment—a process-oriented scientific thought experiment in modern science where observer effects are significant—the intrinsic value centered on emotional aesthetic activity, which manifests dramatically in two forms, was extended into a duty of action.

The research results indicate that, above all, aesthetic value in both rational and emotional senses is manifested through the experience of the active value of the experiment, where aesthetic value is dramatically revealed during the scientific process of experience. The degree of this intrinsic value and ecological responsibility leads to more obligatory and environmentally friendly behavior toward the environment.

As for educational implications, to serve as the foundation for building a sustainable society and nature, environmental education that internally transfers aesthetic intrinsic value over value as a tool must be prioritized. We must emphasize the environmental ethical attitude highlighted by Leopold, which views nature not merely from an economic perspective, but above all from an aesthetic oneself, treating nature with love and respect as a living community to which one belongs.

Keywords: Cognitive value, Intrinsic value, Heritage value, Schrodinger cat quantum thought experiment, Active intrinsic value, Environmental ethical value

I. Introduction

Above all, Block and Keller (1998) stated that uniform environmental education that ignores the stages of behavioral change can only yield partial effects. Therefore, for the sake of environmental education, it is necessary to explore the stages of students' behavioral change as a holistic process for value realization.

Among the two axes of environmental education—the cognitive-knowledge aspect and the attitude-behavioral aspect—environmental-emotional education places greater emphasis on the latter. While environmental ethics education focuses on establishing ethical principles and moral laws to form environmental responsibility, environmental emotional education strives to derive psychological laws and rules of the mind.

Therefore, this study regards environmental education as a learning process that guides from the cognitive aspect (knowledge and skills) to the practical aspect (desirable attitudes and behaviors).

Thus, the aim of this research is methodologically to establish value principles that serve as an important premise for the first stage of the holistic process for friendly environmental behavior, which is the goal of environmental education, and to examine how judgmental facts are approached as value judgments in accordance with such value principles. The second step involves extending to human judgments of duty that demand immediate and desirable actions for the realization of such values.

The main aim of our research is to explore the process of moving toward concrete actions for value realization—the second step—based on experiments of historical quantum theory. To achieve this aim, the specific research questions are as follows:

First, what is the correlation between values and duties, and what constitutes ecological responsibility, necessary to lead to practical eco-friendly behavior?

Second, based on Schridinger's thought experiment, what is the beauty of the experiment? Furthermore, how does this quantum thought experiment lead to eco-friendly behavior?

Finally, what are the implications for environmental education based on quantum theory?

II. Obligation, a concrete law of behaviors, as the moral realization of abstract values

As a strategy to guide the moral realization of abstract values toward obligation, which is a concrete law of action, this study introduces the correlation between values and duty, as well as ecological responsibility.

First, accepting the view of strong value theorists that values contain duty, and based on the correlation between values and duty,
the degree of abstract values influences the duty regarding actions governed by more concrete rules.

Second, ecological responsibility is an ontological responsibility, which can be described as a specialized moral responsibility. Ecological responsibility is the human responsibility to ensure the survival of all living things existing in the natural world that are at risk of extinction. This is because all living things exist in interdependence. It implies that the fact that each

individual living thing actually exists and the expectation that it can continue to exist are essential.

Thus, given the demand for duty-based action according to values and the fact that everything is interconnected, humans, as moral beings, must bear ontological and ecological responsibility toward nature.

Ecological Responsibility

According to Jonas, a renowned philosopher of responsibility, the concept of responsibility is broadly divided into two categories based on the locus of responsibility. One is responsibility as the locus of causal liability for actions already performed, and the other is responsibility for actions yet to be performed. The former is causal responsibility, the prerequisite of which is causally connected power; therefore, it refers to legal responsibility rather than moral responsibility. On the other hand, the latter is 'ontological responsibility,' an obligation arising from human power and threats against nature; it refers not to responsibility for the act and its consequences, but to responsibility for the situation that gives rise to the right to demand such action. In this case, since that situation exists outside of humans yet is clearly situated within the sphere of human power, responsibility must be borne toward the natural world.

Ecological responsibility cannot be causal responsibility. This is because the locus of causal liability may be a prerequisite for moral responsibility, but it is not moral responsibility itself. Ecological responsibility is an ontological responsibility that can be described as a specialized moral responsibility. Because all living beings exist within interdependent relationships, the fact that each individual living being actually exists and the expectation that it can continue to coexist are necessarily required (Jonas, 1984). Ecological responsibility is not causal responsibility, which holds individuals accountable for actions and their consequences, but rather ontological responsibility, which involves bearing responsibility for the circumstances that give rise to the demand for action. In other words, it signifies human duty regarding what must be acted upon in the future.

In ecocentrism, which holds that even non-human realities in the natural world possess intrinsic value, responsibility is an ecological responsibility for nature, based on moral grounds.

The responsibility implied by anthropocentrism, which posits that only humans can be moral subjects and objects of ethical duty, is an ecological responsibility for ourselves, based on calculative (or moral) grounds (Ko, 2023, pp. 317-318).

Hans Jonas (1979) derives the ecological imperative through a confrontation with the 'categorical imperative' of Kantian ethics. Kant's categorical imperative is not normative in itself but formal. In contrast, the ecological imperative is extremely normative, stating that it must not endanger human life. Furthermore, Kant's categorical imperative focuses on the individual because it relates solely to the agent's capacity for self-determination and does not consider the consequences. Conversely, the ecological imperative possesses a public and collective character because it requires that the consequences of one's actions align with the continuation of human activity in the future (Ko, 2023, p. 319).

The correlation between value and duty is the view of those who argue that value is explained by duty in some way or that it is reducible to duty. This argument can be applied to environmental ethics. In the case of teleology, it is easy to establish a correlation between value and duty because duty is defined by the function of intrinsic value.

By modifying Moore's teleology (1903, p. 25), it was suggested that the principle "If an action maximizes the degree of its existing intrinsic value (inherent value), then that action is deontological" can be adopted (Han, 2006, p. 51). In this study, to apply a teleology incorporating this utilitarian view to environmental ethics education,

"If a human act can increase the degree of intrinsic value (inherent value) existing in nature, that act is required of us, as moral beings, as an obligatory ecological responsibility for nature and toward nature." was adopted as the principle of the correlation between value and duty.

Based on Leopold's land ethic, Callicott's ecological environmental ethic can summarize ethical duty (moral) judgments through the following argument, in which all members of the community of life fall under the variable x (Han, 2006, p. 170).

If some x is a member of the community of life, then x possesses intrinsic value.
Some x is a member of the community of life.
Thus,
Some x possesses intrinsic value.

.....

therefor,

Some x possesses intrinsic value, and the moral agent in the position to bring them into existence is required to have an ethical duty to respect x in order to realistically concretize that intrinsic value, by accepting the intuition of the realization of equality and safety within the community of life, which is the life of the community of life.

"If a human act can increase the degree of intrinsic value (inherent value) existing in nature, that act is required as an obligatory ecological responsibility to us, who are moral beings, for nature and toward nature."

Above all, it can be said that the degree of inherent value is connected to duty and the degree of requirement is determined by the correlation between value and duty, which implies that duty is implied in value.

Our emotional understanding and appreciation of the beauty and wonder of the world urge us to take immediate, ethically responsible environmental action. In a thought experiment leading to greater perfection, if the world were truly moving as it is—one that evokes wonder and awe within the entire ecosystem, where the beauty of a simpler, more symmetrical, and more coherent theory manifests—how should we act in such a world? (Moore & Nelson, 2013). If we hold such respect, if the world is one where such laws apply, then naturally we must deeply care for and actively protect it. And if we are called upon to fulfill these environmental ethical obligations regarding the future, we ultimately survive in this world. Consequently, the first imperative of ecological responsibility naturally becomes the ontological imperative that "humanity must continue to exist. "

Passmore (1974, p. 116) stated that two conditions must be satisfied for a moral community to be formed. One is the sharing of common interests and concerns, and the other is the recognition of mutual obligations. According to Callicott, the mutual cooperation between the most heterogeneous entities—bacteria and humans—can be described as a biological symbiotic relationship. For instance, if bacteria did not play the role of circulating energy by decomposing end-of-life organisms within the pyramid of life, the life energy on Earth would cease. Therefore, the first condition of shared common interests can be said to be satisfied by all members of the Earth.

The problem lies in the second condition. To belong to a moral community, its members must recognize mutual obligations. For humans to have reciprocal obligations toward non-human beings, those non-human beings must also possess moral rights toward humans. However, since non-human beings do not possess moral rights toward humans, there is no reason for humans to bear moral obligations toward them (Passmore, 1974, pp. 116-117). In other words, if the claims of anthropocentrism are constructed as an argument based on a series of ideas,

(Major Premise) For humans to be required to fulfill moral obligations by natural beings other than humans, such natural beings must have moral rights toward humans.

(Minor Premise) Natural beings other than humans do not have moral rights to make demands of humans.

.....

Therefore,

(Claim) Humans do not need to bear direct moral obligations toward natural beings other than humans.

In other words, many anthropocentric environmental ethicists, including Passmore, conclude that, first, natural beings other than humans do not possess the moral right to make demands of humans, and second, that because of this, humans have no reason to bear moral obligations toward natural beings other than humans.

Regarding Passmore's argument, McCloskey (1979, p. 27) takes the following stance:

He raises no objection to the first argument, specifically the minor premise that "natural beings other than humans do not possess the moral right to make demands of humans."

However, he points out that the major premise is false. This is because there are obligations that do not presuppose rights. This is precisely the relationship between humans and nature. Therefore, since the second argument is not justified, he rejects the claim that humans do not need to bear moral obligations or responsibilities toward natural beings other than humans.

Consequently, the mere fact that natural beings other than humans and their formation processes lack moral rights—as stated in the first argument—does not allow us to conclude that humans cannot have obligations toward them, as stated in the second argument. Ultimately,

we must not regard non-human beings merely as tools, nor treat nature as possessing only instrumental value for humans. In other words, this is the most critical problem with anthropocentric environmental ethics.

Let us call the idea that every duty implies a right the "correlation of duties and rights." For example, if a debtor has an obligation to repay a debt to a creditor, it can be said that the creditor has the right to receive repayment from the debtor.

Then, is the correlation between duties and rights a law that always holds true? The answer is no (Han Myeon-hee, 2006, p. 91). Hans Jonas also finds the possibility of non-reciprocal responsibility in the fundamental responsibility of parents toward their children. A child grows up receiving the love and devotion of their parents, but in the process, the child does not possess the realistic ability to repay them. In particular, the unilateral fundamental responsibility that parents hold toward newborns, who lack everything, indicates that the relationship between the child and the parent is an asymmetrical moral relationship. Likewise, natural beings that require human assistance but live under threat due to the deficiencies of nature outside of humans must be the objects of human responsibility.

From an ontological perspective, a monistic view of nature is correct. This is because everything, including humans—that is, the entirety of existence—can be viewed as a single, interconnected nature. However, from an epistemological perspective, a dualistic view of nature is appropriate. This is because when perceiving and conceptualizing nature, a conceptual distinction between humans and nature as subject and object is inevitable (Kim Il-bang, 2005, p. 27).

Therefore, the attitude of treating nature as an object of ecological responsibility is an ontological responsibility, and thus it is appropriate to treat it as a moral responsibility.

In order to concretize the realization of aesthetic intrinsic value, which is dramatically manifested in the dramatic transition process between the two forms of the micro and macro worlds in Schrodinger’s cat quantum thought experiment, into a moral value, moral agents—mediated by the desirable attitude of empathy for life, which involves affection for living beings residing on Earth who exist connected to all beings in the universe like the laboratory cat—should intentionally perform the duty of a practical rule as an obligation to respect all things existing around us?

The answer appeals to intentional and responsible pro-nongovernmental behavior that goes beyond pro-environmental attitude for the preservation of their future sustainable intrinsic value.

If so, if our understanding of this environment is formed through this ecological imperative of responsibility—that we can ultimately survive in this universe—it naturally becomes an ontological imperative that 'the ecosystem, including humanity, will continue to exist in the future.' <Judgment on Specific Environmental Ethical Obligations>

It can be said that not only knowledge itself but also the experiences demonstrated during the activity process of its completion possess active intrinsic value, or the bequest value (Kim Ho-jeong, 2023, p. 213) that we cherish. Using a sustainable theory of value instead of Partridge's (1984) intrinsic value, the realm of valuation is elevated from a synchronic dimension to a diachronic ethical dimension. It can be said that the degree to which we understand nature as beauty influences the extent to which we appeal to our ontological responsibility (duty) toward nature. Therefore, environmental education needs to strengthen this ontological responsibility toward nature.

By maintaining an attitude of emotional aesthetic perspective—integrity, symmetry, and simplicity—that further explains nature probabilistically based on the relationalism of quantum mechanics and also explains already accepted theories such as Newtonian mechanics, which is substantialism and determinism, we appeal to be led beyond an environmentally friendly attitude of treating nature, to which quantum mechanics applies, as an ethical object with love and respect as the entire community of life to which we belong, to voluntary and intentional environmentally friendly behavior. Therefore, it implies that we can ultimately continue to survive alongside the ecosystem in this universe in the future.

This is an "ontological responsibility," an obligation arising from the power and threats regarding human delay, and refers to responsibility for situations that give rise to demands for action. In this context, since the situation exists outside of humans yet is clearly situated within the sphere of human power, responsibility toward the natural world is required. It is an ethics of future responsibility that takes as its two major conditions the imperative of existence of nature as an object and the imperative of action of humans as subjects called to manage such

situations (Jonas, 1984).

Based on moral grounds and the demand for our "ontological responsibility" for nature's sake and toward nature, the conditions for actual environmentally friendly behavior—and the life of the community of life—call upon humans to act in harmony with nature through internal harmony, harmony among humans, and harmony between science, technology, and nature (Lee Yun-bok, 2023, pp. 124-126).

For a moral being who understands this as beauty—specifically the experience of a dramatic transition from the probabilistic and relational world of weak determinism (as in the Schrödinger's cat thought experiment of quantum mechanics) to the substantial world of strong determinism—since quantum mechanics itself and the natural world to which it applies possess aesthetic intrinsic value,

First, regarding the individual's internal harmony, humans as individuals are called upon to pursue happiness in the true sense of reality through the harmony of their potential capabilities, which are the various abilities they possess.

Secondly, harmony among humans, as a socio-ethical aspect, involves a shift in attitude across various political, economic, social, and cultural spheres, acknowledging the potential capabilities of others as a community of life and building a community of shared human life through cooperation.

Thirdly, it can be said that the community of life, not humans, is the master of science and technology. Responsible environmental action is required to harmonize science and technology with human potential capabilities alongside the beauty of nature, thereby promoting mutual well-being as moral beings.

According to Gendler (2016), such scientific thought experiments must consist of a tripartite argument structure divided into the following three important parts (p. 21).

First, an imaginary scenario is described.

Second, an accurate evaluation of that scenario is provided through the attempted argument.

Third, there is an evaluation of the scenario through an actual experiment that goes beyond the scenario.

Thus, a philosophical thought experiment can be described as providing the first imaginary situation and the second evaluation of it, and concluding from that evaluation (Choi Hoon, 2017, p. 37). However, a scientific thought experiment must be possible according to the laws of natural science, and a possible actual experiment follows. On the other hand, an actual experiment refers not to an imaginary scenario, but to the performance of an actual experiment premised on a possible idealized or quasi-idealized state using the tools of actual experimentation.

The ancient Greek experiment of Eratosthenes, which highlights the beauty of geometric symmetry in figures, and Newton's 'Sansago experiment,' which articulates and predicts such geometric symmetry through mathematical equations, speak of physical realism, asserting the existence of objective objects independent of our minds. However, Schridinger's quantum theory and the cat library experiment demonstrate a weak anti-realist characteristic—instrumental and probabilistic—that rather than the existence of a substance independent of our minds, it can only be known through the relationship between our minds and objects. Furthermore, unlike classical physics, the duality of things is beautifully expressed through the principle of complementarity, alongside the uncertainty principle, which states that conditions are not definitively determined.

In Western ancient Greek thought and classical physics, it can be said that the world as an object of consciousness is subject to dualistic separation and three principles of thought. Ultimately, this can be described as the world of substance as defined by formal logic and Plato. On the other hand, the nature of ideas according to the pragmatist Dewey can be summarized as follows (Park Chan-guk, 2023, p. 271).

The experiment of Eratosthenes in ancient Greece, which highlights the beauty of geometric symmetry in figures, and Newton's 'Sansago experiment,' which clarifies and predicts such symmetry through mathematical equations, speak of physical realism, which posits the existence of objective objects independent of our minds.

First, ideas are not immutable absolutes like Plato's Ideas, but rather things that change as human experience grows. In other words, they are not transcendent standards, but guidelines that guide our actions moment by moment.

Second, ideas are creative products produced by the active human intellect, rather than passive experiences received from the outside.

Third, ideas hold significance as tools for improving our lives and environment.

Fourth, ideas are not separate from actions but are connected to them.

What specifically does the ecological responsibility of ecologists mean?

According to A.S. Hookr (1992, pp. 148-150), environmental responsibility is classified into types based on three categories: for whom, to whom, and why.

We can be responsible for nature or for ourselves; we can be responsible for God (or a transcendent being), for nature or for ourselves; and we can be responsible because of the commands of God (or a transcendent being), our prudential interests, or moral demands.

In order to realize the intrinsic value of nature through the thought and actual experiments of the scientific theory of quantum mechanics and its application, and above all through the moral persuasion of environmental ethics, we can assume ontological ecological responsibility toward nature for ourselves and for nature.

In Figure 1, generally speaking, according to the correlation between values and duties for axiologists, the degree of value influences specific duties of action. The intrinsic value manifested in quantum experiments demonstrates a strong degree of emotional value. Therefore, it influences the duty of practical action, demanding immediate action beyond mere attitude.

Regarding the ecological responsibility of ecologists—specifically, the fact that everything in quantum mechanics is interconnected—moral beings bear an ontological responsibility toward nature to preserve it. Consequently, this leads to immediate action to preserve nature.

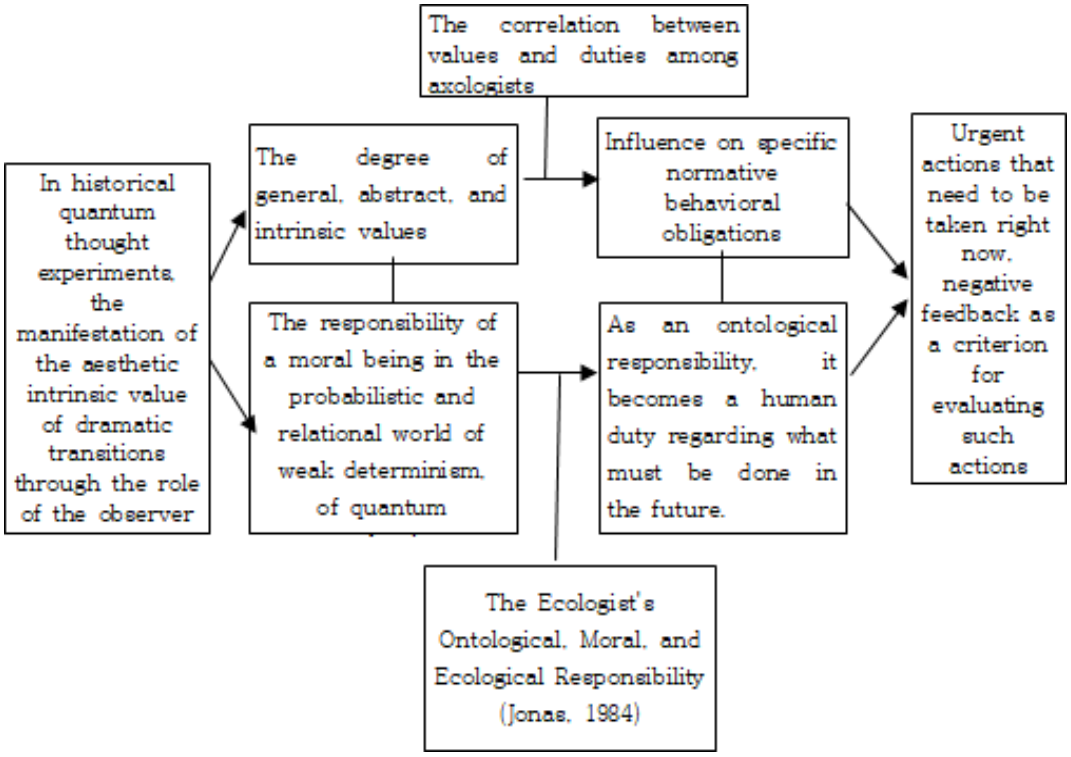

Figure 1. Correlation between Value and Obligation regarding Intrinsic Value, and Ontological Responsibility

III. The Beauties of Experiments Demonstrated Through Integrative Transference

In general, regarding education and the environment, we examine the definitions of beauty as presented by educational philosophers and environmental ethicists. We also explore the beauty of scientific experiments.

1. What is the general answer to the question, "What is beauty?" or "What is beautiful?"

Dewey (1980), an educational psychologist and pragmatist, derived three aesthetic theories from empirical and psychological aesthetic experiences (Girod, et al. 2003, pp. 578-579). Subjectively and psychologically, emphasizing feelings in aesthetic experience,

First, to be able to understand aesthetically means having the power to transform things into what we desire.

Second, to understand aesthetically means being able to bind and integrate things into a single whole.

Third, to understand aesthetically means that an event is so psychologically and sensibly breathtaking that we cannot help but marvel at it, and it is dramatically dazzling.

According to the recent work of Han YJ. (2020),

above all, it signifies a return to holistic beauty, becoming more integrated, becoming substantial, the emergence of general wholeness, and a deep sense of depth (Han Yun-jeong, 2020, pp. 176-177).

Beauty is a combination of harmony and a vitality that makes experience alive. The power of beauty is the sensation of vitality and being alive through establishing positive relationships with the world around us, with humans, and with things beyond humans (Han Yun-jeong, 2020, p. 175).

In conclusion, it is necessary to move away from the mechanistic and anthropocentric worldview—the dominant paradigm of modern culture—which posits that humans exist autonomously while existing independently of non-human subjects. Instead, we need to emphasize an evolutionary worldview that highlights the virtue of cooperation and the quantum mechanical worldview of modern science that emphasizes the effect of the entanglement of everything in the world.

Here, feeling, subjectivity, and value are interconnected. These are all counterweights that oppose the assumptions of the mechanistic worldview. In the world of living subjects, it is through profound sensation that one can simultaneously perceive the wholeness and details of the world.

Above all, at the core of the concept of sustainability—which has been emphasized most recently—lies the question of value: what is worth sustaining? It is a matter that goes beyond mere sustainability for future generations. Sustainability must not become a goal in itself, nor should it be reduced to the issues of energy conservation and renewable support. The question we need to ask is akin to, “Can we live in a way that promotes beauty?” Thus, sustainability becomes a practical point through which we can reach a world where we prosper alongside beauty.

2. The Beauties Shown in Scientific Experiments: Focusing on the Schridinger's Cat Quantum Thought Experiment

From the perspective of aesthetic experience, what Schridinger's cat quantum experiment teaches us is that beauty depends on the manner in which what is intended to be shown is presented.

Through the research on the beauty of experiments by Crease and Robert P. (2003), researchers in the history of science, philosophy of science, aesthetics, and modern philosophy, and by applying Schridinger's cat quantum thought experiment,

Aesthetic transition

Relations (Quantum Mechanics) >>> Reality (Newton Mechanics)

Microscopic system >>> Macroscopic system

The World of Probability >>> A world of strong determinism

Stability >>> Accuracy

In a thought experiment involving a dramatic aesthetic transition from the probabilistic world of quantum mechanics to the deterministic world of substance, it demonstrates the beauty of quantum mechanics and the beauty of nature to which this theory applies.

A moral human being who is emotionally moved by this intrinsic aesthetic value adopts a morally responsible attitude that this nature must be continuously preserved for the future.

First, the three elements of beauty speak of depth, efficiency, and definitiveness. (Aesthetic research by philosophers and artists, pursued for centuries, Crease, 2003, p. 16)

1. Schrödinger's cat quantum thought experiment is profound, concise, and decisive, as it demonstrates that two forms of completely different theories (quantum theory and Newtonian theory) can be dramatically understood.

Second, the philosopher Heidegger states that beauty is something that reveals itself through transference within confusion (Crease, 2003, p. 16).

Beauty is beautiful when a transference occurs between the archetype within diversity, the infinite within the finite, and the divine within the secular. In other words, he emphasizes that beauty reveals truth and goodness. That is, the task of finding the definition of an object within undefined chaos is akin to finding what is concealed. Instead of definitiveness, Heidegger uses the term "unconcealment," which carries a more comprehensive meaning. While modern technology forcibly reveals itself, nature reveals itself. It emphasizes that this ultimately holds the same meaning as truth.

In beauty, a transition occurs where the archetype emerges within diversity, the infinite within the finite, and the divine within the secular. (Plato and Heidegger, emphasizing transition and revelation, Crease, 2003, p. 16).

1. The attributes of the universe are derived from the hypothetical entities of the quantum thinking laboratory, such as the cat in the box. Through Schridinger's thought experiment, we can derive the archetype of the universe (form, intellectual object) from various types (matter, sensory object), such as extreme chaos or a cat that disappears in the blink of an eye.

Although the objects of inferential thought belong to the ‘intellectual object’ along with the form, from the perspective of existence itself, they are ‘intermediate numerical objects’ between the forms and sensory objects. Through these intermediates, a relationship is formed between them through ‘involvement,’ ‘manifestation,’ and ‘combination’ (Son Dong-hyun et al., 2013, p. 51).

2. The Schridinger quantum thought experiment turns our gaze in the opposite direction, leading us to discover vastness within the things of the small world. This experiment broadens the horizons of our perception and allows us to approach the seemingly simple question of "What is substance, and how does it come into being?" in a new way.

Above all, we realize that we are in close relationship with everything above the temporary universe. In other words, a transition occurs from the finite to the infinite.

Furthermore, a divine transition takes place from the secular realm, moving from what is experiential on earth into the mathematical and divine world (Plato considered God to be a mathematician). In ancient Greece, there was an exploration of what does not change; initially, this was expressed as material or atoms, but Pythagoras and Plato identified it as mathematics. The world of mathematics was the divine world.

Third, beauty is not separate from the discovery of truth, but accompanies it. It strengthens a new understanding (depth) of nature. (Crease, 2003, p. xix)

1. Through this experiment, people came to understand that the small world is actually separate from us, that time may not flow, and that space is established by the superposition of information.

2. This experiment indicates that small things, temporary things, and things of all dimensions are ultimately connected.

In conclusion, through these experiments, the whole is not formed from the synthesis of parts, but rather we perceive a change that transcends the parts. All matter (information) influences one another to create something new.

First, generally speaking, according to the correlation between value and duty in axiology, the degree of value influences specific duty to act. The intrinsic value manifested in the cat quantum thought experiment demonstrates a strong degree of emotional value. Therefore, it influences the duty of practical action, demanding immediate obligatory action beyond mere attitude.

Second, regarding the ecological responsibility of ecologists—since all things in quantum mechanics are interconnected—moral beings bear an ontological responsibility toward nature to preserve it. As a result, they engage in immediate action to preserve nature.

Third, immediate eco-friendly action involves not only our reduction of greenhouse gases to address global warming, but in environmental education, it refers to changes in daily life such as using public transportation and reducing household waste. The criterion for judging such changes in daily life is negative feedback. Fourth, Reflection Theory is a hypothesis that acknowledges the objective fact of environmental degradation, posits that it was imposed from the outside of society, and posits that environmental awareness grew as a result of the public becoming aware of and interested in this fact. In other words, it explains the relationship between the deterioration of ecological conditions and the growth of environmental awareness through a direct correlation. This aligns with common sense, and some empirical research results support this theory. However, there are many studies showing that objectively measured levels of environmental degradation do not necessarily correspond to subjective levels of environmental awareness (Hannigan, 1995, p. 24).

Rather than such fact-oriented environmental education, value education is the most significant practice required by the current era (Oh, et al., 2026). This is because, in an environment of rapid change, value education, rather than knowledge education, enables one to survive as a desirable human being. It can be said that practical strategies for current value education are necessary in response to these demands of the times. Furthermore, in the AI era, value education serves as an important alternative to the knowledge-education-oriented education system.

IV. Conclusions and Suggestions

Based on the discussions to date, I will summarize the correlation between values and duties in environmental education and the role of ecological responsibility.

First, general environmental education has a problem regarding environmental behavior. In other words, the alternative lies in moral persuasion.

Second, regarding the general correlation between values and duties, value theorists argue that values contain duties. It can be said that the degree of a value influences obligatory behavior.

Third, regarding the intrinsic value of relational theory—which posits that everything in certain quantum theories influences one another—it can be seen that humans, as moral beings, are called upon to assume ecological responsibility as an ontological responsibility for nature through moral persuasion.

Fourth, synthesizing these two discussions, it can be seen that the quantum mechanics experiment of dramatic transition in understanding the two forms strongly drives eco-friendly behavior due to the ontological responsibility to realize strong aesthetic intrinsic values.

Fifth, the most urgent obligatory action can be identified as the international danger of climate change. This is because climate change is occurring due to human greenhouse gas emissions. The behavioral evaluation criteria for such mandatory public service can be described as negative feedback.

Sixth, regarding educational implications, environmental education should be structured through moral persuasion and fundamentally aimed at ecological responsibility.

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