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The Ecological Thoughts Researching on the Rachel Carson's "*Silent Spring*"

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Abstract: Rachel Carson as a famous American Marine biologist contemporary, is not only a American most famous ecological literature writer in the 20th century, but also a heroic fighter of struggling for the long-term survival and sustainable development of mankind. The masterpiece Silent spring published in 1962's is regarded as a milestone in the history of the development of the ecological literature of Europe and America. This article attempts to more in-depth research of Carson's ecological thought, the paper is divided into five parts: the first part and second part analyze nature writing and environmental imagination of this work by the logical the logical thinking of the author, and trying to answer why spring having been silent; The third part criticizes science and technology and the anthropocentrism by the author's environmental suffering consciousness as the rumbling of collapsing; The fourth part discusses Carson how to pointed out the other way of salvation the future of humanity; The fifth part: going away to think, is discussed Carson how to get rid of the ivory tower, main researches ecologists how to actively involved in social conscience and responsibility, awakes people's environmental crisis consciousness by Practicism philosophy of Positive action.

Keywords: Rachel Carson; Silent Spring; the Ecological Holism; Anthropocentrism

1. Introduction

Rachel Carson (1907-1964) is not only a famous contemporary American marine biologist, but also the most famous American writer of ecological literature in the 20th century, a fighter for the protection of all living things on the earth, and for the long-lasting survival and sustained development of human beings. As a writer of ecological literature with rigorous scientific consciousness, she depicted the natural environment, revealed ecological problems, and disseminated ecological philosophical ideas, which had a profound and wide-ranging impact on the formation of the public's ecological concepts, the development of ecological research and environmental protection movements, and the environmental policies and development strategies of the U.S. and even many other countries around the world. 1957, Carson was diagnosed with cancer. Since 1958, she began to focus her energies on the already growing problem of pesticide abuse, and in 1960, Carson underwent a mastectomy, but the cancer continued to spread throughout her body. This period of time coincided with her writing of *Silent Spring*. Carson completed the writing of *Silent Spring* with tenacity and a strong sense of responsibility. Carson died of breast cancer in 1964, two years after the book was published. It can be said that *Silent Spring* is the last work of Carson to write her ecological thought with her life. The book has been hailed as a milestone in the development of ecological literature in Europe and the United States. It is said to be "like a cry in the wilderness, changing the course of history with its deep feeling, comprehensive research, and eloquent argument""reversing the direction of human thought"[1],"triggered a worldwide revision of development strategies, environmental policies, and public policies"[2].This thesis attempts to make a more comprehensive study and evaluation of Carson's ecological thought on the following six levels.

2. Tomorrow's Allegory: From Beautiful Nature Writing to Brutal Environmental Imagination

When Carson created the work *Silent Spring*, although she changed her previous poetic and picturesque style and chose more straightforward and scientific statements, the book still opened with a natural and poetic writing:

Once upon a time, there was a town in the middle of the United States where all living things seemed to live in harmony with their surroundings. The town was situated in the

center of prosperous farms arranged like a checkerboard, surrounded by fields of crops and hills of orchards. In the spring, flowers dotted the green fields like white clouds; in the fall, through the screen of the pines, oaks, maples, and birches shone with a flaming, colorful light, foxes barked on the hills, and fawns passed quietly through the wilderness shrouded in the autumn morning mist.[3]3

Carson's poetic text describes for us a quiet world as beautiful as a fairy tale: forests of orchards, white flowers, green fields, so that a town in the central United States around a vibrant spring scene; and the screen of pine forests, oak, maple and birch flashing flames of colorful light, as well as the fox's chirping, quietly crossing the field of the deer presents a dynamic and static beauty of the perfect blend of autumn scrolls. It's the visual delight of creatures in harmony with their surroundings that attracts countless birds, and migrating birds flock to the area throughout the spring and fall.

Of course, Carson is not aiming to present us with "Arcadian" nature writing here, but, as a strong contrast and reference, immediately shows us the brutal "allegory" of a desolate village destroyed by pesticides as a substitute for the once "picturesque" world: a strange shadow covers the area and ominous omens descend on the village: mysterious diseases attack flocks of chickens; cows and goats fall ill and die; the doctor is increasingly baffled by a new disease that kills his patients suddenly; and the plants lining the paths are scorched and withered. Everywhere the specter of death hovered. All these places, abandoned by life, have become dead: "It is a silent spring. The mornings here used to swell with the chorus of crows, cranes, pigeons, guillemots, geese and cranes, and other birdsongs; now all sound is gone, and only a silence covers the fields, woods, and marshes."[3]4The once idyllic village is enveloped in a strange and terrifying silence.

Here, rather than fictionalizing the story of a spring's transition to "silence" with slightly sentimental strokes, Carson tells us the dreadful "fable of tomorrow" from the perspective of an ecological "fable" narrative. Ecological critic Greg Garrard once called *Silent Spring*, a classic of American nature literature, a "parable of tomorrow" because "the story Carson describes for us awakens our awareness of environmental protection, and this is also the beginning of environmentalism. " Garrard writes, "Focusing on images of natural beauty and emphasizing the 'harmony' between humanity and nature that 'once' existed, this fable begins by presenting us with a picture depicting that most basic of constancy, which is rarely disturbed by people, and the change of seasons from year to year only reinforces this constant nature. However, the peace of the idyll soon gives way to catastrophic destruction." From this, Greg Garrard notes, "On one level, 'silent spring' means the loss of birdsong, and at the same time it becomes a metaphor for a broader environmental apocalypse."[4]

As a writer of ecological literature with a strong sense of humanistic concern and worry, Carson does not aim to tell people an alarmist "doomsday fable", but to explore the deeper causes of the "silence" of spring with his own ecological responsibility and the rigor of a scientist. What is it that has silenced the sounds of spring in countless American towns and cities? What havoc has been wrought by "this hideous specter"? The mission of Carson's book is to try to answer this question. Let us follow Carson's logic and life practices to discover the deeper causes of the "silence" of spring.

3. Death's Special Medicine: Why Is Spring Silent?

In order to find out the deeper causes of the spring "silence", Carson did a lot of research work, collected a pile higher than her own literature. In addition, she also wrote letters to relevant scientific authorities around the world on all the important issues. Based on rigorous and realistic toxicological, ecological and epidemiological research, Carson determined that pesticides, herbicides and other chemical drugs called "death's special medicine" are the main culprits leading to "Silent Spring". She pointed out in her book that since the 1940s, the most alarming attack on the environment by human beings has been the serious pollution of the air, land, rivers and oceans caused by the misuse of the above dangerous and even fatal chemicals, which is to a large extent irreversible and difficult to recover from. The misuse of pesticides and other chemical substances has brought about a series of evils that have not only entered the external world on which living creatures depend for their survival, but have also invaded the internal tissues of living organisms in a pervasive manner. It is the misuse of these "special drugs of death" that has caused

unprecedented pollution of water systems and soils, as well as lasting, predatory harm to plants, wildlife, and even human beings, leading to the spread of global ecological crises and outbreaks.

Carson's concerns are not rooted in the fiction and imagination of literature, but are based on precise scientific reasoning as well as concrete statistics and survey information. "These drugs have been found in fish in remote mountain lakes, in earthworms wriggling and burrowing in the soil, in bird eggs, and in the human body ; they are now stored in the vast majority of people, regardless of their age. They are also found in the milk of mothers, and possibly in the cellular tissue of unborn babies."[3]16-17In this paragraph, the author uses several locatives to prove that the harm caused by chemicals has reached an appalling level: the harm caused by these "special drugs of death" is not only confined to the animal world, but also spreads to human beings, and the terrible specter of these chemicals can be found even in the cellular tissues of unborn babies.

Since the 1950s, Carson has been tracking the effects of pesticide use on the environment and human health, especially the deadly effects of DDT on the environment and on life. In the chapter of "Death's Specialty Drugs", Carson describes in detail the types of pesticides made by modern mankind, their properties and their negative effects. From the point of view of chemical composition, modern insecticides are divided into two main categories: one is DDT as a representative of chlorinated hydrocarbons; the other is malathion and parathion (1605) as a representative of the organophosphorus insecticides. Among them, DDT, short for dichlorophenyltrichloroethane, was first synthesized by a German chemist in 1874, and the insecticidal properties of DDT were discovered by Paul Muller of Switzerland in 1939. Shortly thereafter, DDT was hailed as a panacea for the eradication of infectious diseases and crop pests, and Muller was awarded the 1948 Nobel Prize in Physiology or Medicine for his work. In most people's minds DDT synthetics are considered a versatile and harmless everyday substance, but Carson proved that the belief that DDT is harmless is in fact a fatal misunderstanding. According to Carson, DDT is definitely toxic when dissolved in oil, and if swallowed it is slowly absorbed through the digestive tract; it is also absorbed through the lungs. Once in the body, it is stored in large quantities in the adrenal glands, testes, thyroid gland and other fatty organs, with a significant portion remaining in the liver, kidneys, and the fat of the mesentery (because DDT itself is fat-soluble). Even more frighteningly, this lipid storage acts as a biological amplifier; for example, if one part in ten million is ingested during a meal, the accumulation in the body can reach a level of about 10 or 15 parts per million, an increase of more than l00 times. In tests with animals, scientists have found that three parts per million inhibits an enzyme in the heart muscle, and only five parts per million can cause necrosis and collapse of liver cells.

Carson also tells that one of the most frightening properties of DDT and its ilk is that they are transferred from one organism to another through all the links in the food chain: when alfalfa dusted with DDT is used as chicken feed, the eggs laid by the chickens contain DDT; when hay with a small amount of DDT residue is used as feed, the cows get the toxic substance in their bodies, which then passes from the milk into the human body. Through this process of transfer, the small amount of DDT is concentrated and gradually increases. Most seriously, chemicals such as DDT pose a deadly threat to the genetic material that is the link between the past and the future of mankind, "These chemicals have the ability to strike directly at the chromosomes and to affect them in a precise way," and the lethal blow that chemicals such as DDT pose to the genes and chromosomes of "has become a menace of our time, the last and greatest danger to human civilization."[3]216

Carson points out that due to increasingly frequent exposure to chemical carcinogens, people are facing the threat that one in four people will get cancer. She also cites the results of the scientist Waberg's experiments to show people that: first, the destructive results of chemical carcinogens are irreversible once they have been established; second, there is no "safe" dose of carcinogens to ingest because a large dose of toxicity kills the cells instantly, while small doses allow some cells to survive that are already in a damaged state, and the cells that are already in a damaged state to survive.What Carson reveals in his book is shocking to the average modern reader.

Carson's research shows that, in addition to DDT, there are many other chemicals that pollute the environment and jeopardize life and health:

dieldrin can damage the nervous system; dieldrin's variant, aldrin, not only damages the liver, it causes infertility.; herbicides contaminate the soil; detergents contaminate the water supply system; and so on. Carson in the book cited a large number of scientific experimental data and harmful facts, to prove to people to pesticides as a representative of the chemical substances into the human body, will inhibit and destroy the oxidation of human cells, and deprivation of oxygen in the cells will lead to a series of serious consequences: embryonic development in the process of tissue growth and organ development of the normal process of disruption, triggered by congenital malformations and congenital diseases; lead to reproductive function decline; trigger malignant lesions; and an increasing incidence of cancer.

"The history of life on Earth has always been the interaction between organisms and their surrounding environment."[3]6While people are recklessly destroying the environment, utilizing chemicals such as pesticides, DDT, insecticides, etc. to satisfy their meager needs is also tantamount to using insecticides to murder everything around them and themselves. Therefore, Carson argues that it is these "special drugs of death" that are the root cause of the silence of spring.

4. The Rumble of Collapse: Criticism of Science and Technology and Anthropocentrism

In *Silent Spring*,Carson not only made public the harmful facts of chemical drugs, but also further questioned the modern concept of conquering and controlling nature and the arrogant scientific attitude, criticizing the arrogant anthropocentrism.

She points out that the reason why humans want to inject a large amount of chemical agents into nature is entirely out of a narrow natural concept, which is to completely decide the existence of animals and plants according to their own will, retain what is beneficial to them, and sentence them to death if it is unfavorable to them. It is on the basis of such a narrow anthropocentric value and ethical attitude that has led to the irresponsible scientific hubris of modern man and modern technological stupidity. Carson writes:

The term "control of nature" is the product of a delusional imagination, the product of a time when biology and philosophy were at a lowly and infantile stage, when "control of nature" was conceived as the existence of nature for the convenience and benefit of man. These concepts and practices in applied entomology are largely attributable to scientific ignorance. It is our great misfortune that such a primitive science has been armed with the most modern and terrible chemical weapons, which, while being used against insects, have been turned to threaten the whole of our earth, this is truly our great misfortune.[3]313

In Carson's view, this is a kind of irresponsible scientific arrogance and modern technological ignorance, which has not only failed to transform nature to the satisfaction of human beings, but also destroyed the inherent ecological balance of nature and caused the ecological crisis of nature. Carson directs her critique at anthropocentrism, pointing out that human beings see themselves as the masters of all the substances on the earth, believing that everything on the earth, including animals, plants, and minerals, was created specifically for human beings. Here, Carson criticizes the notion of human control over nature and delusional self-imagination, and advocates for humans to put themselves "in their proper place." Carson insists that, as the most intelligent, powerful, beneficial and destructive species on the planet, we must place ourselves in the system of nature and take responsibility for the harmony and balance of the whole system as well as the relationships within the system, and that only by giving up the anthropocentric ideology and the right to subjugate and dominate nature can we truly save the planet and all the life that belongs to it. Otherwise, it is human beings themselves who may be jeopardized and destroyed.

Carson sees chemical drugs as a crude weapon invented by modern humans, which not only kills an insect but also damages the natural defense system of nature, leading to even more terrifying and serious consequences. Carson used the insect control program that people were conducting at the time as an example to illustrate the terrifying consequences of the destruction of natural defense systems. With a large amount of specific investigation data and scientific facts, he questioned the human plan to control nature: in response to human chemical drug attacks, insects develop their adaptability through genetic selection to resist chemical drugs. This means that under the attack of chemical drugs, insects have developed drug resistance. For example,

when DDT and other insecticides kill the enemies of spider mites, spider mites become a pest that spreads all over the world. Spider mites specialize in feeding on chlorophyll in the green world, causing the leaves of trees and shrubs to first become mottled and eventually wither and fall. The data report on insect resistance has reached a surprising level: the resistance of houseflies and coat lice has now developed globally; The main transmitter of pestis, Diptera orientalis, has recently shown resistance to DDT; The plan to conquer malaria encountered difficulties due to mosquito resistance. It does not take long for insects to develop resistance to a chemical drug. Before 1945, scientists learned that about a dozen or so insects gradually developed resistance to certain insecticides before the emergence of DDT. With the emergence of new organic chemicals and a large number of new application methods, insect resistance is also rapidly developing. Before 1945, scientists learned that about a dozen or so insects gradually developed resistance to certain insecticides before the emergence of DDT. With the emergence of new organic chemicals and a large number of new application methods, insect resistance is also rapidly developing. By 1960, 137 species of insects had developed drug resistance.The development of insect resistance is so rapid that when the ink on a report celebrating the success of certain chemical drugs in controlling an insect is still wet, another correction report has to be issued. Nowadays, due to the continuous improvement of insect resistance, people have to use one insecticide instead of another to cope with the pest problems they face. Therefore, Carson quotes a famous British animal population researcher, Dr. Carls Elton, as a warning to modern people who are passionate about chemical control: "We are listening to an initial rumbling sound that may turn into a huge collapse."[3]277

From this, Carson concluded that the truly effective control of insects is done by nature, not humans. As entomologist Robert McCarthy once said, "The most significant factors in preventing insects from destroying the tranquility of our world is the internecine wars that insects wage within themselves."[3]256Carson believes that while human spraying control programs temporarily control the reproductive population of certain insects, they have opened the Pandora's box containing pests. Once the defense of the environment is weakened, the truly explosive reproductive ability of certain insects will revive, and the pests in the box have never existed before.It seems that human's attempts to control insects with chemicals are futile, and will even be met with larger-scale retaliatory counterattacks by the hardy surviving insects. Carson makes a deep criticism and reflection on human's attempts to control nature by using chemicals and other modern science and technology in a wishful thinking way: "It is indeed a sad irony that we have failed to transform nature to our liking, at great risk to ourselves. Yet it seems that this is our reality. The real truth, though seldom mentioned, which is apparent to all, is that nature is not so easily molded, and that insects can find tricks to skillfully avoid the blows we deal them with chemicals."[3]254

Ecological thinker Worcester believes that the global ecological crisis we face today is not caused by the ecosystems themselves, but by our cultural systems. To get through this crisis, the impact of our culture on nature must be understood as clearly as possible. There is hope for the future of humankind if it abandons its prideful conquest of nature and embraces the ecological concept of living in harmony with all the creatures of the earth: we must share our planet with other creatures, and only if we take this force of life seriously and carefully try to channel it to the benefit of humankind can we hope to create a reasonable harmony between the insect community and ourselves.

As Carson has pointed out bitterly, it would be a tragedy for the Earth, and even more so for mankind, if mankind were to continue to treat the planet on which it depends with a conquering mentality and an arrogant attitude of "controlling nature". She concludes that mankind can no longer expand its spirit of conquest, but must respect nature with an ethical attitude.

5. The Other Way: the Way Out and Salvation for Mankind

In the final chapter of *Silent Spring*, "The Other Way," Carson writes with a sense of concern: "We now stand at the intersection of two roads. But the two paths are very different, and they are very different from the paths that people are familiar with in the poems of Robert Frost. The road we have been driving on for so long makes it easy to mistake it for a nice, flat, superhighway on which we can travel at high speed. In fact, disaster awaits at the end of the

road. The other fork of the road -- the 'less traveled' fork -- offers us our last, only chance to save our planet."[3]291-292In her powerful brushstrokes, Carson shows us the two paths that lie ahead of humanity: survival along the fork less traveled, or destruction along the seemingly comfortable and flat path of common mistakes. This is indeed the so-called "Hamlet proposition" that modern human beings need to think about and make a careful choice.

With eloquent facts and scientific reasoning, Carson warned the people that chemical control puts humanity on a path to ultimate destruction: "This chemical war can never be won, and all living things will be killed in the crossfire of violence."[5]99She pointed out that insecticides such as Aldrin and dieldrin have the ability to destroy chromosomes. Casting a shadow of infertility over the future: Many chemicals used as pesticides, herbicides, or insecticides have the ability to damage chromosomes, interfere with normal cell division, or cause cell mutations. These damages to genetic material can cause disease in individual organisms exposed to pesticides and can also affect future generations with their effects. Carson points to examples as evidence: In 1959, a group of British and French researchers found that some human diseases were caused by the disruption of the normal number of chromosomes, and that the number of chromosomes in patients with the disease was out of line with normal values, and that "the original cause of the defects in these patients must have come from the previous generation."[3]210Carson points out that we are now giving chemicals the ability to strike chromosomes directly and affect them in precise ways. These chemicals are filling our environment, and this is an inescapable reality that humanity is facing. Facing the bleak future of mankind, Carson writes sadly: "For humanity as a whole, the treasure infinitely more precious than individual life is our genetic material, which is the link between our past and our future." Over a long period of evolution, our genes have not only made us what we are, but they hold the ominous future in their tiny bodies. At present, however, the hazards caused by human factors have become a threat of our time, "the last and greatest danger to human civilization."[3]216

Since chemical control is the path to humanity's destruction, Carson, with the conscience of a scientist, shows humanity a future path to salvation. Citing the philosophy of the Canadian entomologist G.C. Urritt, she argues that biological control is superior to chemical control of insects: "We must change our philosophical views, abandon our attitude of human superiority, and admit that we can discover ideas and methods of limiting populations, inspired by the realities of nature, which are more economically sound than those we can devise ourselves." Carson believes that "biological control" is a human solution to the ecological crisis, that is, to try to turn the power of an insect against the insect itself, using the trend of the insect's vitality to destroy itself. Carson spends much of this chapter arguing for the many effective ways in which biotechnology has been used to control insects, the most impressive of which is male sterilization. The technique was developed by Dr. Edward Kniplin, director of the USDA's Entomological Research Institute, and his collaborators based on an understanding of the structure of living organisms and the entire living world on which they depend. The theory of "male sterilization" is that if it is possible to render a large number of sterile insects and release them so that these sterile males can compete with normal wild males in certain circumstances, then by repeatedly releasing sterile males, unhatchable eggs may be produced, and the population becomes extinct. Experiments with "male sterilization" techniques have also been surprisingly successful: the program was completed in the southeastern United States in 17 months. The whole process is to artificially raise 3.5 billion screw flies, and scatter the infertile flies throughout Florida and Georgia and Alabama. The last possible infection of animal wounds caused by screwflies occurred in January 1959, after which no screwflies were found for several weeks.

Scientists have also explored a variety of successful "biological control" methods: such as: using "youth hormones" as attractants to kill male insects on a large scale; Using ultrasound to kill insects, using sound to influence and control insect behavior; The use of bacterial infection to destroy insect populations; Use of predatory and parasitic insects for biological control; Development of "forest hygiene" using one insect to control another; In addition, the successful experiments of killing insects by electronic, gamma-ray, sound and other physical methods were also explored. Stop the use of chemical synthetic pesticides, with the above-

mentioned electronics, optics, biology and other non-polluting weapons to control harmful insects, not only to maintain the ecological balance, protect the ecosystem, but also to stop killing, protect ourselves. These successful experiments in "biological control" perfectly answer Carson's question: "Can any civilization wage a merciless war on life without destroying itself and without losing its rightful dignity?"[3]102

In the penultimate paragraph of the book's final chapter, "Alternative Paths," Carson writes in an ecologically holistic way: "We have to share our planet with other creatures, and we have invented many new, imaginative and creative ways to solve this problem; As this situation develops, a recurring theme is that we are dealing with life - living groups, all the pressures and counter-pressures they undergo, their rise and fall. Only by taking this force of life seriously, and carefully trying to direct it in a way that is beneficial to mankind, can we hope to develop a reasonable harmony between the insect community and ourselves."[3]312-313 Here, Carson suggested that the way out to save humanity lies in: To abandon the pride of anthropocentrism, to recognize both the rights of man and the rights of all things in nature, that all things in the universe are in harmony with each other and in universal connection, and that man can only share the beauty of the earth with other creatures, rather than trying to conquer and control nature. This is the ideal way of living that human beings should choose in line with dialectics.

Later in life, Carson argued that man had gone too far in the man-made world he had invented: "He made the city out of steel concrete, isolating himself from the reality of the earth, the reality of the water, the reality of the germinating seed." The human race, intoxicated with a good sense of its own power, seems to be going further and further down the road of experimentation to destroy itself and the world.[6]221Carson emphasized that a true civilization is one that lives in harmony with nature. She asserts that no civilization can wage a brutal war on life without destroying itself and losing its credentials as a civilization. Carson believes that the kind of civilization that only cares about the relationship between people is never a real civilization. "What matters is humanity's relationship to all life, and this relationship has been tragically neglected in our age, in which we are using technology to wage war on nature." Does any civilization have to do this? Should we insist on this right of so-called civilization? That's a real question worth asking. To acquiesce in the unnecessary destruction of nature, to ignore the suffering of nature, the human spirit will be lost."[7]

In contrast to her nature writing and environmental imagination, Carson sadly pointed out the seriousness of the ecological damage and environmental destruction of chemical pesticides on the earth. While letting us hear the rumbling collapse of the earth, Carson worryingly pointed out another way for human beings to get rid of the ecological dilemma: giving up chemical drugs and using the balance between organisms to maintain the natural ecological balance. It is also the only and last hope for mankind to move from destruction to the path of salvation.

6. Going Away to Think: Active Intervention and the Responsibility of Ecological Criticism

Going Away to Think "is a representative work by renowned ecologist Slovic of the University of Nevada in the United States. As the title of this book expresses," Going Away to Think "is actually a study style study that breaks away from the ivory tower and advocates for a practical philosophy that actively intervenes in society and takes action. Carson's creative practice was the pioneer of ecologists actively intervening in society and initiating this activism philosophy.

As Carson researchers have pointed out, the creative goal of *Silent Spring* is to “change public opinion and ignite a fire for the government.”[6]312-313In his later years, Carson gave up writing several books such as *About the Earth's Past* ,*The Atmosphere Around Us*, *Reconstructing Curiosity towards Nature,*and devoted his last moments of life to major real-life issues such as insecticides that were crucial to the lives of millions of people. He actively intervened in society to write about the "real situation of life”[5]120, with fearless courage and tenacious will, engages in a desperate struggle against social forces that destroy the ecological environment. The release of the work *Silent Spring* has sparked heated discussions from various sectors in the United States. Faced with attacks and false accusations from institutions representing the interests of pesticide manufacturers, Carson vigorously countered. Carson, who had never appeared in public before,

was tirelessly busy writing articles, giving speeches, hearing hearings, and receiving television interviews. He actively intervened in society and bravely stood at the forefront of public opinion; Carson, dragging his seriously ill body around, made multiple calls and shuttled through various conferences and social activities such as the *Silent Spring* luncheon, the American Association of University Women's Social and Economic Affairs Conference, the White House Natural Resources Conservation Conference, the American Association of Librarians Conference, the National Garden Federation, the Audubon Nature Society annual luncheon, and CBS television interviews, Devoting all the last moments of life to the revelation of ecological crisis and the dissemination of ecological ideas, in order to awaken the awareness of ecological crisis among the public and the government, and promote the development of ecological protection.

Carson's great creative shift from "expression" to "intervention" has important implications for later ecological writers and ecological critics: That is to say, ecological literature and ecological criticism as a whole should change from the artistic expression of aesthetics, philosophy and psychology to ecological reality, face the criticism, and actively intervene, highlighting the cultural function of ecological literature and ecological criticism to intervene in society and reality. Like Carson, many ecological writers and critics in later generations have a strong sense of ecological responsibility and take it as their bounden duty to criticize anti-ecological ideology and culture and promote social development. Many ecological critics also regard it as the main mission of ecological literature and ecological criticism to intervene in real social life through literature, eliminate ecological crisis and establish ecological civilization. The famous ecocriticism Cheryl Grotfelty puts it well: “There is a common motive in most ecocriticism writing: the uneasy realization that we have reached an age when we have crossed the threshold of environmental bearing, in which the consequence of human actions is to destroy the Earth's life support systems. We are in such times. Either we change our way of life or we face a global catastrophe."[8] Mikkel, the first proponent of ecocliticism, asked: "Is literature a creative act that makes us better fit for life on Earth, or an act that alienates us from it?" From the perspective of ruthless evolution and natural selection, does literature contribute to our survival or accelerate our extinction?"[9]Ecological critics recognize that human literature is responsible for the ecological crisis, because it is itself one of the deep cultural causes of the ecological crisis. The proliferation of anti-ecological literature means the continuation of ecological disaster. Ecological literature and ecological criticism should be a redemptive action. Writers and critics must transform literature and literary ideas to end the crime against nature and save mankind from the predicament of ecological crisis.

Silent Spring is just like a cry in the dark, awakening the ecological concept and environmental awareness of the general public. When *Silent Spring* came out, there was no such thing as "environment" in American public policy. The problem of environmental pollution raised by Carson in this book has awakened and inspired the public and policymakers to take "environment" into consideration. In 1963, President John F. Kennedy discussed the book before Congress, and the President's Scientific Advisory Committee set up a panel to investigate the book's conclusions, which confirmed Carson's warnings about the potential hazards of pesticides. In this great discussion affecting all walks of life in the United States, Carson's environmental protection and ecological ethics ideas gradually became the consensus of millions of people, and had a significant impact on the formulation of government environmental policies and development plans. Various private environmental organizations were born, and the United States Environmental Protection Agency was established. In 1963, the National Wildlife Federation gave Carson its first annual award for protectionism. It was Carson, a small woman suffering from cancer, who, with her extraordinary scientific courage and deep ecological ethical beliefs, launched the environmental protection movement in the United States and around the world.

7. Conclusion

Carson, who never married, devoted his life to ecology and literature. Carson is not only an outstanding ecological writer and ecological thinker, but also a true fighter - a warrior for the protection of the earth, the protection of the ocean, the protection of all living things and for

the long-term survival and sustainable development of mankind. As former U.S. Vice President Al Gore said in his preface to the new edition of *Silent Spring*, summarizing Carson's significant impact on environmental protection in the United States and around the world: "Her voice will never be silent, and she will wake not only our country, but even the whole world." The publication of *Silent Spring* should rightly be seen as the beginning of the modern environmental movement." Carson opened a new era of ecological literature creation with her excellent creative performance.

References

[1] Paul Brooks, The House of Life: Rachel Carson at Work (Boston: Houghton Mifflin,1972), p227.

[2] Carol B. Gartner: Rachel Carson (New York: Fred-erick Ungar Publishing,1983), p1.

[3] [U.S.] R. Carson, Silent Spring, translated by Ruilan Lv, Beijing: Science Press, 1979.

[4] Greg Garrard, Ecocriticism (New York: Routledge, 2004), p1.

[5] Gartner C B. Rachel Carson[M]. New York: Frederick Ungar Publishing Company,1983.

[6] Lear L, Carson R. Witness for Nature. New York: Henry Holt and Company,1997.

[7] Brooks P. The House of Life: Rachel Carson at Work. Boston: Houghton Mifflin, 1972.P316.

[8] Glotfelty C, Fromm H. The Ecocriticism Reader: Landmarks in Literary Ecology[M]. Athens: The University of Georgia Press, 1996.P15-16.

[9] Meeker J W. The Comedy of Survival: Literary Ecology and a Play Ethic.3rd ed. Tucson: The University of Arizona Press, 1997, P4.