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Towards “silent springs”: reverberation of Rachel Carson's warning 60 years later

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Abstract: Rachel Carson (1907–1964) was a Nature writer who became famous for her exhortations to take care of ecological places, which are inserted in her narrative in the form of fable, but also like chronicles. Her most famous book –*Silent Spring*– became a best seller and was said to be the classic that launched the global environmental movement. Despite this, sixty years after her death, people around the world are experiencing “silent springs”. The aim of this paper is, therefore, to highlight the importance of Rachel Carson’s literary work to humanity’s gain of responsibility for the caring of world’s places and spaces, to preserve future spaces from devastation. For this, theories about place and space as those of Gaston Bachelard (1884-1962) and Yi-Fu Tuan (1930–2022), among others, will be examined and connected to Carson’s ecological warnings.

Keywords: Ecocriticism; ecological space; fable.

Rumo a “primaveras silenciosas”: a reverberação do aviso de Rachel Carson 60 anos depois

Resumo: Rachel Carson (1907-1964) foi uma escritora de livros sobre natureza que se tornou famosa por suas exortações ao cuidado com os lugares ecológicos, inseridas em sua narrativa em forma de fábula, mas também como crônicas. Seu livro mais famoso – *Primavera Silenciosa* – tornou-se um *best-seller* e foi considerado o clássico que lançou o movimento ambientalista global. Apesar disso, sessenta anos após sua morte, pessoas ao redor do mundo estão vivenciando “primaveras silenciosas”. O objetivo deste artigo é, portanto, destacar a importância da obra literária de Rachel Carson para a conquista da responsabilidade da humanidade pelo cuidado dos lugares e espaços do mundo, a fim de preservar os espaços futuros da devastação. Para isso, teorias

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sobre lugar e espaço, como as de Gaston Bachelard (1884-1962) e Yi-Fu Tuan (1930-2022), entre outros, serão examinadas e conectadas às advertências ecológicas de Carson.

Palavras-chave: Ecocrítica; espaço ecológico; fábula.

Rumbo a “primaveras silenciosas”: la reverberación del aviso de Rachel Carson luego de 60 años

Resumen: Rachel Carson (1907-1964) fue una escritora de libros sobre la naturaleza que se hizo famosa por sus exhortaciones al cuidado de los espacios ecológicos, las cuales se insertan en su narrativa en forma de fábula, pero también como crónicas. Su libro más famoso, *Primavera Silenciosa*, se convirtió en un éxito de ventas y se considera el clásico que impulsó el movimiento ambientalista global. A pesar de ello, sesenta años después de su muerte, la gente en todo el mundo está experimentando “primaveras silenciosas”. El objetivo de este artículo es, por lo tanto, destacar la importancia de la obra literaria de Rachel Carson para que la humanidad asuma la responsabilidad de cuidar los lugares y espacios del mundo, a fin de preservar los espacios futuros de la devastación. Para ello, se examinarán teorías sobre el lugar y el espacio, como las de Gaston Bachelard (1884-1962) y Yi-Fu Tuan (1930-2022), entre otros, y se las conectarán con las advertencias ecológicas de Carson.

Palabras clave: Ecocrítica; espacio ecológico; fábula.

Introduction

Rachel Carson (1907–1964) was a pioneer in the ecological field who transcended her academic achievements as a marine biologist, as well as the limits of being a female scientist in the first half of 20th century, to impel the environmental movement (Oliveira; Uhmman, 2021). Besides, she was also a great writer whose bestseller *Silent Spring* astonished the public, provoking all kinds of reactions, from applause to sour confrontation.

Silent Spring was published in 1962, two years before Carson’s death. But it is still considered an important tool for environmental education and ought to be a compass to guide governmental measures through preservation of Nature and protection of humanity. On the other hand, *Silent Spring* can be discussed as a narrative text whose first chapter is titled *A fable for tomorrow*. So, the aim of this paper is to emphasize the importance of Rachel Carson’s work as well as the literary value of her writing.

The methodology adopted in this article combines literary analysis of Carson’s book and a review of its impacts on society. The evolution of the environmental movement towards ecological world attitudes is here analyzed from the perspective of Carson’s literary work. Within this issue, the care of places and spaces for the well-being of people will be discussed by considering Carson’s viewpoint. Her ideas fought against the use of pesticides and other practices that guaranteed the increase of agro-industries and other corporate profits at the expense of the existence of many kinds of living beings, especially insects and birds. To update

Carson's *Silent Spring* discussion to evaluate the reverberation of her thoughts after sixty years, it is necessary to verify how industries have changed ecosystems in the last decades and their impacts on both human and non-human landscapes. This brings together the concept of "Anthropocene" and its consequences, showing Carson's contributions to such debate.

This is bibliographic research of intercultural character that considers Yi-Fu Tuan's reflections upon spaces and places (Tuan, 2014) and Gaston Bachelard's perspectives of 'house' and 'outside world' related to the Earth, as well as his images of 'nest', to present well-being as a concept that must include all Nature (Bachelard, 1994). Also, Amanda Hagood's paper *Wonders with the Sea: Rachel Carson's Ecological Aesthetic and the Mid-Century Reader* (2013) is crucial to introduce Rachel Carson as an author. To update Carson's achievements, it was examined Michael Smith's article '*Silence, Miss Carson!*' *Science, Gender, and the Reception of Silent Spring* (2001), as well as other works that show the reception of her book. The contributions of up-to-date theories on Nature sustainability of Fabio Rubio Scarano (2024), a Brazilian Professor of Ecology, bring a more optimistic point of view to the discussion on the consequences of the Anthropocene earlier identified by Carson, in order to overview the general mentality of the Third Millennium and think of ways of making use of Carson's warnings nowadays. The interpretation of Carson's literary work will be set up based on Umberto Eco's theories (2011) but also considering the ecocriticism perspective of other relevant authors.

A fable for tomorrow

Silent Spring entwines different genres of narratives apart from scientific study, such as chronicle and a fable that introduces the narrative, which has some characteristics of a fairy tale. In fact, the book's first chapter, named *A fable for tomorrow*, tells how a harmonic city surrounded by nature was destroyed by industrial interests, whose factories poisoned birds, other animals and of course humans too.

As Jerome Bruner says, "we organize our experience and our memory of human happenings mainly in the form of narrative-stories, excuses, myths, reasons for doing and not doing, and so on" (Bruner, 1991, p. 4). Sometimes the narratives mix genres to enlighten

certain conditions with the required details. Eco (2011, p. 19) explains: “Once an author has designed a specific narrative world, the words will follow, and they will be those that the particular world requires”. These words come to light organized in a specific way that designs a genre.

Fables are short narrative stories, often with animal characters, which include a moral teaching that can be implicit or otherwise explicit, as a warning instruction. In Carson’s book, the fable begins as a fairy tale: “There was once a town in the heart of America where all life seemed to live in harmony with its surroundings” (Carson, 2002, p. 1). Usually in fairy tales time is an indefinable past. *A fable for tomorrow* also resembles a fairy tale for the suspicion of a magic phenomenon: “Then a strange blight crept over the area and everything began to change. Some evil spell had settled on the community: mysterious maladies swept the flocks of chickens; the cattle and sheep sickened and died. Everywhere was a shadow of death” (Carson, 2002, p. 2).

Between the beginning and the end of this story, there are also some other elements of fairy tales that can be applied to fables, which are described by Vladimir Propp (2009) in his *Morphology of the Folktale*. Propp says that many tales proceed from villainy or a lack, as seen in Carson’s fable, where the villain spread “a white granular powder [that] had fallen like snow upon the roofs and the lawns, the fields and streams” (Carson, 2002, p. 3). Its warning is to avoid doing such things, but since villainy continues to happen and cause lacks, the tale must take on developing other moves towards a rebalance of the situation. So, it is still an unfinished fairy tale.

On the other hand, unlike fairy tales, where places are not precisely shown, Carson’s fable is situated not only in America, but socially in the very broad context of the Anthropocene, and it ends up alerting to its dangers:

On the farms the hen brooded, but no chicks hatched. The farmers complained that they were unable to raise any pigs – the litters were small and the young survived only a few days. The apple trees were coming into bloom but no bees droned among the blossoms, so there was no pollination and there would be no fruit. [...] No witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves (Carson, 2002, p. 2-3).

As a fable, Carson's text has many animals: chickens, cows, sheep, pigs, and so birds that would not sing anymore: "On the mornings that had once throbbed with the dawn chorus of robins, catbirds, doves, jays, wrens, and scores of other bird voices there was no sound; only silence lay over the fields and woods and marsh" (Carson, 2002, p. 2). They could not confront their adversaries' tools; therefore, they perished. Thus, the animal voices that usually fill up fable narratives cannot express their warnings in this one, except for their silence.

This fable can be read aside from the book with the aim of being used as a lesson of ecology or as a manifest for the care of Nature. Just as Umberto Eco (2011, p. 6) remarks, "sometimes a novelist can say things that a philosopher cannot". As a poetic narrative about Nature conditions, *Silent Spring* fable brings out contradictory feelings such as anger and personal responsibility, pity and shame.

The other chapters of this book may be considered chronicles because they can be read separately. This configuration of the book enabled it to be published, like Michael Smith (2001, p. 733) described, "first appearing in an abridged serialization in the New Yorker in the summer of 1962".

It is hard to define chronicle as a literary genre, but in Brazil the analyses point towards a common accordance –not related to History– that designate chronicles as texts whose "argumentative potential and ability to seduce and engage the reader are often used as strategies to achieve the intentions of the authors or medium for which they write" (Thomé; Rodrigues, 2020, p. 181). Carson's writings fulfill the conditions, pointing out very clearly her opinions in a charming as well as convincing way. Furthermore, chapters of *Silent Spring* concentrate on specific issues that are of course related, but not interdependent. For example, "The obligation to endure" is a chapter that shows how Nature fights to persist, no matter the costs, and claim better life conditions for the good of future generations; "Elixirs of death" explains the chemicals of insecticides, like arsenic, that have "caused sickness and death among horses, cows, goats, pigs, deer, fishes and bees" (Carson, 2002, p. 17). Consequently, it also shows how the human diet contains dangerous metals.

The fourth chapter of this book, named "Surface waters and underground seas", describes how poison spread all over and down the waters, so that "[p]lankton organisms were found to contain about five parts per million of the insecticide (about 25 times the

maximum concentration ever reached in the water itself)” (Carson, 2002, p. 48); the next one –“Realms of the soil”– expounds the high degree of contamination of fruits and vegetables. “Earth’s green mantle” attests to the Nature capability to provide balance on “the role of plant-eating insects” (Carson, 2002, p. 83), so that it would be possible to maintain natural controls if crops and its surroundings would not be so distorted by monocultures, specially of soy. The chapter “Needless havoc” is a manifest for every form of wildlife, and the chapters “And no birds sing” and “Rivers of death” follow in the same cadence. The string that ties off all chapters is DDT and similar chemical compounds, which fall, as says the title of the tenth chapter, “Indiscriminately from the skies”. Then, “Beyond the dreams of the Borgias” shows how to poison people at home by simply buying food products, which the author concludes with a joke: “As matters stand now, we are in little better position than the guests of the Borgias” (Carson, 2002, p. 184).

After considering in the subsequent chapters “The human price” that is paid nowadays, the irreversible genetic changes explained in “Through a narrow window”, and the history and spread of cancer in “One in every four”, Carson displays how “Nature fights back” and “The rumblings of an avalanche” of insects, proving “the survival of the fittest” (Carson, 2002, p. 263). To conclude, she brings forward a new plan of living, “The other road”.

Some people could ask what the purpose for a scientist is in producing lyrical writing instead of scientific articles, essays and so on, or to insert fiction inside these. As scientific research aims at world development, the spread of its results among people in general contributes to the change of mindedness. In fact, scientific discoveries and philosophical challenges are not supposed to be kept among research communities, but to encourage general discussions on human paths. Umberto Eco says Literature “is not intended solely for entertaining and consoling people. It also aims at provoking and inspiring people to read the same text twice, maybe even several times, because they want to understand it better” (Eco, 2011, p. 31). The purpose of *Silent Spring* is far away from distracting readers with a fable or descriptions of fauna and flora, for to change minds, it must upset and provoke reflection.

When this book was published, Carson was just a recognized writer. Her first book, *The Sea Around Us*, “won [...] the National Book Award for nonfiction, and Carson was elected to the American Academy of Arts and Letters. She was lauded not only for her scientific

expertise and synthesis of wide-ranging material but also for her lyrical, poetic voice” (Lear, 2002, p. xiv). But instead of being praised, she was sourly criticized: “In the eyes of some powerful people, Rachel Carson behaved badly by using her skills as a writer and scientist to marshal public support against the killing of eagles, osprey, robins, and other birds” (Crocco; Shuttleworth; Chandler, 2016, p. 21).

The book dedication to Albert Schweitzer (1875–1965) shows Rachel Carson concerns over human lack of will to take care of Nature. In fact, Carson quoted Schweitzer, who said: “Man has lost the capacity to foresee and to forestall. He will end by destroying the earth”. Although this excerpt has not been found in some of Schweitzer’s books or other texts available on the Internet, it is often reproduced as an aphorism. Contenders of Carson have argued that she had misunderstood the meaning of Schweitzer’s idea, but the fact is that this intertextuality admits many interpretations of the same sentence, among which the one that Crocco, Shuttleworth and Chandler (2016, p. 21) summed-up as “the dangers of the pesticide DDT, including its bio-accumulation in the food chain, threats to living organisms, and impact on the ecosystem”. On the other hand, transtextuality between Carson’s and Schweitzer’s works shows the similitude of both authors’ feelings on the dangers of humanity actions. These two great thinkers feared the consequences of the broad-based actions that capitalism would adopt all over the world without considering the safety of Nature and humankind.

Taking care of places and spaces

In 1962, “Rachel Carson’s alarm touched off a national debate on the use of chemical pesticides, the responsibility of science, and the limits of technological progress”, says Linda Lear in the Introduction of *Silent Spring* (Lear, 2002, p. x). It could seem that Carson’s endeavor to help Nature was achieving some goals. “While Carson knew that one book could not alter the dynamic of the capitalist system, an environmental movement grew from her challenge, led by a public that demanded that science and government be held accountable” (Lear, 2002, p. xviii). Despite these initiatives, the use of pesticides has increased exponentially since then and they are sprayed all over crops that feed humans and animals, as well as over these.

Some years after Carson’s work success, came out *The limits to growth* (1972), a report from *The Club of Rome's* authors Donella H. Meadows, Dennis L. Meadows, Jørgen

Randers and William W. Behrens III, among other specialists of *MIT Project Team* who were researching the conditions of life on Earth. *The Club of Rome's* members, almost a hundred professionals of many countries, conceived the *Project on the Predicament of Mankind*, to study and propose solutions for “poverty in the midst of plenty; degradation of the environment; loss of faith in institutions; uncontrolled urban spread; insecurity of employment; alienation of youth; [...] and inflation and other monetary and economic disruptions” (Meadows *et al.*, 1972, p. 10). For this context, they considered geographical space where humans live, as well as perspectives of space, to ponder: “In general the larger the space and the longer the time associated with a problem, the smaller the number of people who are actually concerned with its solution” (Meadows *et al.*, 1972, p. 18). It means people tend to conceive the importance of life and health care from a very narrow point of view that considers only themselves, their relatives and fellows, and their own personal interests.

Despite this, ecocriticism has been recently established as an approach of analyzing Literature in general, that widens human perspective to consider the impacts of civilization on Nature and how fiction and poetry can enlighten this issue. It is a way of giving importance to artistic works that bring consciousness to the responsibility of people for the health of all nature, from the surroundings of places where they live till the most remote boundaries of Earth. It is a realm that derives from the first theories proposed by ecological seekers such as Carson.

For instance, in *Silent Spring*, spaces and places are mentioned in a way that opposes them, so as to draw attention to the ecological aspects of the explanations. Spaces, where all kinds of living beings are at home, can be the soil, the forests, the sea and so on. On the other side, the referred places can be the laboratories where poisons have been created and “insects were widely used to test chemicals as agents of death for man” (Carson, 2002, p. 16). *A fable for tomorrow* impacts in this way the whole text as a time frame beyond which could exist only Earth destruction.

Rachel Carson was a scientist that based her books on research. However, the poetics of space into Carson's fable and other chapters is fictional, as it generally occurs in Literature, which doesn't mean it is not a significant representation of reality. On the contrary, it was her

personal lyrical skills that highlighted her writing work. Umberto Eco mentions about his own writing techniques: “I had never paid attention to my description of spaces, but by reflecting on that question I realized what I have already said – namely, that if you design every detail of a world, you know how to describe it in terms of space, since you have it before your eyes” (Eco, 2011, p. 17). Carson wrote like that, creating an abundant world in danger of destruction.

It was no longer after Carson’s work that discussions on spaces and places increased: “Forty years ago the understanding of space and place were brought into light in the moment that humanist geography was starting to be drawn by some very dissatisfied geographers with the status quo of our science” (Tuan, 2014, p. 4). But there were already some thinkers like the French philosopher Gaston Bachelard introducing fresh ideas before that.

Bachelard’s perspectives of ‘house’ and ‘outside world’ are related to the Earth and even universe, as well as his images of ‘nest’, so he presents well-being as a concept that must include all Nature: “Thus, well-being takes us back to the primitiveness of the refuge” (Bachelard, 1994, p. 91). In this sense, nests are places while the rest of the Earth is a huge space full of challenges but not at all hostiles. As a fact, people tend to have, as Bachelard (1994, p. 94) remarks, a childish idea of a nest, for it is not a bird sanctuary of love, but “a hiding-place for winged creatures”. And although the term ‘empty nest’ has such symbolism to humankind, Carson explained that in America, since the fifties, some nests became empty because birds as “robins were being poisoned, not so much by direct contact with the insecticides as indirectly, by eating earthworms” (2002, p. 107).

So, the arguments for *Silent Spring* constructed upon this fable that point to silent springs on Earth are not based on the dichotomy between space and place –on how humans have transformed space– but on healthy or unhealthy places and spaces, and by healthy it means not causing diseases basically provoked by chemical industrial products that are by all means purposely destroying lives. Unfortunately, as Carson (2002, p. 13) points out, this is “an era dominated by industry, in which the right to make a dollar at whatever cost is seldom challenged”.

Amanda Hagood celebrates *Silent Spring*’s achievement for “its deft blending of science and poetry, its trenchant analysis of the corporate-sponsored research that encouraged Americans to spray first and ask questions later, and the critical role it played in

catalyzing the environmental movement in the United States” (Hagood, 2013, p. 57). Although successful in its way, the disastrous effects of spraying poison all over the world have continued until now. An impressive example was the use of the arsenical herbicide known as Agent Blue during Vietnam war, not only to destroy crops, but also to cause diseases or death, when “plastic bladders were dropped directly into rice paddies, exploding on impact and releasing toxic herbicides, and barrels of herbicides were also dropped into the water irrigating rice paddies, polluting rivers and poisoning the soil and people for many years” (Bencko; Foong, 2017, p. 313). Hagood concludes her profound study on Carson’s scientific path by alerting that “Rachel Carson’s ecocentric vision is more important than ever to our continued survival, but so too is a clear-eyed understanding of the technological and political contexts through which our wondrous visions are mediated” (Hagood, 2013, p. 75).

In this sense, it is crucial to understand that space means also all matter, comprised air, that surrounds us till cosmos, a denotation that must be understood when Steffen *et al.* (2011, p. 858) say: “Aerosols generally act to cool the climate by scattering back into space some of the incoming solar radiation”. Tuan (2014) reflects about the huge changes that humanity provokes in space and places and considers as a “characteristic of modern people [...] that they do not feel bound to community and place” (Tuan, 2014, p. 8).

In another sense, space around us can also be our social system, whose model drives an impact on the whole of humanity. For instance, apart from soy industries and intensive agriculture, there are some outstanding efforts from eco-agriculture groups: “The innovation space in agriculture [...] shows indications of a growing emphasis on the humankind-nature relationship, aiming for a greater balance between social, economic and environmental goals” (Scarano, 2024, p. 73).

Also, must be remembered the presently digitalized spaces created by humankind and their impacts on all brains and minds, as well as all social relationships: “The internet is increasingly a technological space where a sustainability dialogue takes place even between hegemonic modern forces and resistance green movements” (Scarano, 2024, p. 76).

Due to Carson’s warnings, the care of places and spaces began to be considered. Edward Wilson (2002, p. 361), who wrote the afterword of her bestseller, remarked that one “collateral effect of *Silent Spring* was the boost it gave to conservation of natural

environments”. But keeping these places and spaces is not a trouble-free task. Just to mention an example, in 2024, the Legislative Chamber of the Federal District of Brazil distorted some concepts of space and place to approve some changes in the Plan for Preservation of the Urban Ensemble of Brasilia (PPCUB) that will affect the city status as World Heritage Site by UNESCO, for it will destroy Lucio Costa’s project, allowing constructions where there might be only vegetation, as well as tower blocks at Brasilia’s Pilot Plan, and other changes requested by construction companies and contractors (Fórum de Entidades em Defesa do Patrimônio Cultural Brasileiro, 2024). This is a process that has been initiated years ago, with the paradoxical slogan of Brasilia regeneration (Câmara Legislativa, 2023). As Wilson reminds, “the war between environmentalists and exploiters, local and national, [from all over the world,] is far from over” (2002, p. 362).

“Silent springs” in the Third Millennium

At this time of yearly conferences about environmental global situation, when people all over the world discuss the quality of water and its distribution, carbon taxes and many other problems that challenge the maintenance of life on Earth, it is important to review Carson’s lessons. It’s for no other reason that in Brazil *Silent Spring* recently reappeared in bookstores.

As just said, Rachel Carson’s style as a writer contributed to the success of her books, which were read and widely discussed by people in general until this time. But besides the fable and chronicle style of *Silent Spring*, lies academic research that shows Carson’s predictability of the characteristics of the Anthropocene, that at that time had not yet been conceived as a new era, and her astonishment about human capability of destruction of the Earth.

In fact, Carson was a pioneer in many ways, generating new ideas, new movements, new complex theories. For although the concept of Anthropocene was only showed up recently, at the beginning of the Third Millennium, to characterize the rearrangements at large scale that human beings were doing in all Nature, since not only the midst of the twentieth century, but way before, according to some points of view, Carson’s fable is just situated in this very broad context, named the Anthropocene.

Steffen, Grinevald, Crutzen and McNeill (2011) conceived a way to define this era upon the consequences of radical economic changes on Nature all over the world:

It is difficult to put a precise date on a transition that occurred at different times and rates in different places, but it is clear that in 1750, the Industrial Revolution had barely begun but by 1850 it had almost completely transformed England and had spread to many other countries in Europe and across the Atlantic to North America. We thus suggest that the year AD 1800 could reasonably be chosen as the beginning of the Anthropocene (Steffen *et al.*, 2011, p. 849).

Spaces and places have changed since then, and their transformations continue from now on. The Anthropocene has thus been a space that brought very intense modifications on Nature that shift in Earth development. Among its first consequences there was “discovery of the ozone hole over Antarctica, with its undeniably anthropogenic cause, [and] the realization that the emission of large quantities of a colourless, odourless gas such as carbon dioxide (CO₂) can affect the energy balance at the Earth’s surface” (Steffen *et al.*, 2011, p. 842).

For this and many other reasons, Ian Angus agrees with geological researchers that place the beginning of the Anthropocene not so far as the nineteenth century, but in the mid-twentieth century, when technofossils from concrete, plastic and many other synthetic materials began to increase exponentially, and its combustion was spread in the atmosphere. This author also informs that “*even if emission levels are reduced, by 2070 Earth will be the hottest it has been in 125,000 years*” (Angus, 2016, p. 56, emphasis in original).

When Carson quoted Albert Schweitzer’s warning about the destruction of the world by humanity, she was predicting the clear deterioration of the Earth conditions for the proper living of all forms of life, which has happened since the last decades of last century. What is impressive is that as Carson observed at that time, “[o]nly within the moment of time represented by the present century has one species –man– acquired significant power to alter nature of his world” (Carson, 2002, p. 5). It means that after more than two million years of learning how to interact with Nature the human species decided it would be better to destroy it and accomplished this in less than a hundred years.

As said by Umberto Eco (2011, p. 5), writers “[throw] theirs text out into the world like a message in a bottle, so to speak”. Carson threw her bottle with such important warnings and after a little while she died, as if she had been a shipwrecked woman in a revolted ocean,

seeking to leave a message for survivors. It must be emphasized that as soon as this message can be seen as a fascicle of chronicles, it also carries the intentions of this literary genre to project its author and drive attention to some of its ideas: “The chronicle is a textual genre with great argumentative potential. For this reason, it commonly projects the name of the chronicler as an opinion leader” (Thomé; Rodrigues, 2020, p. 2). And because these chronicles have an inserted fable, they also carried the idea of a permanent message that suits all times.

It is a great pity that Carson had not lived enough to continue spreading bottles of messages. As Edward Wilson (2002) proclaimed,

Rachel Carson, who was a quick learner, would be ahead of us in understanding the devastating effects everywhere of still-rocketing population growth combined with consumption of natural resources, the thinning of the ozone layer, global warming, the collapse of marine fisheries, and, less directly through foreign trade, the decimation of tropical forests and mass extinction of species (Wilson, 2002, p. 363).

Yet Linda Lear (2002, p. xi) reminds that “Carson was an outsider who had never been part of the scientific establishment, first because she was a woman but also because her chosen field, biology, was held in low esteem in the nuclear age”. So, the reception of *Silent Spring* was affected by these thoughts about its author, but maybe it was an advantage in the sense that Carson could remain an independent mind. In fact, her ideas were not aligned to political and economic seeks of the time. Carson (2002, p. 6) lamented that despite the industry boost that at that time was priority for her country, “The most alarming of all man’s assaults upon the environment is the contamination of air, earth, rivers, and sea with the dangerous and even lethal materials. This pollution is for the most part irrecoverable”. Her perspectives were not only used in favor of the environmental movement, but also to improve academic research. Scholars of *The Club of Rome* founded, in 1968 (only six years after *Silent Spring* launch), perceived that for the reasons she had already given, “[t]he benefits of pollution-generating activities are usually far removed in both space and time from the costs” (Meadows *et al.*, 1972, p. 85).

Linda Lear highlights, in regard to Carson's image, that when *Silent Spring* was promoted, “the industry spent a quarter of a million dollars to discredit her research and malign her character” (Lear, 2002, p. xvii). Regrettably, while being criticized by

representatives of economic power, Rachel Carson was also fighting against a cancer which was the cause of her death a little later (Lear, 2002).

In the Third Millennium, on the other hand, feminine Literature has increased in relevance and Ecology as a branch of biology has conquered the media. Despite this, world economic systems have still no interest in pursuing environmental theories such as those of Carson's books. So, to investigate the repercussions of *Silent Spring* in the Third Millennium, it must be asked what the position of capitalist industrial might be towards ecological disturbances.

All the world is contaminated by poisons, as Lear (2002, p. xviii) reveals: "DDT is found in the livers of birds and fish on every oceanic island on the planet and in the breast milk of every mother". In Brazil, says Balsan (2006), the green revolution that began in the mid-1960s –during the period of military dictatorship (1964-1985)– when the process of modernization of agriculture took place, it was also marked by actions of large industries in the production and use of agricultural pesticides, chemical inputs and large machinery that also occurred in other countries. Andrade; Ganimi (2007) indicate that all this happened with great government support.

It is perhaps because of this kind of economic process that the regulation of pesticides is not so effective in some countries, such as Brazil. In the Midwest of Brazil, there was the death of a great number of bees and cattle caused by pesticides, that came about in 2023. These chemical agents that are also known today as insecticides (biocides) were developed during the Second World War and many of them were initially designed as chemical weapons (Nasrala Neto; Pignati; Lacaz, 2014). Since then, the situation has gotten worse. Carson had just said: "Yet new and more deadly chemicals are added to the list each year and new uses are devised so that contact with these materials has become practically worldwide" (2002, p. 17). Pesticides invade all places and spaces, causing all kinds of blockages and deformities in the life flow of all beings.

Carson (2002, p. 8) observes that "[i]t is ironic to think that man might determine his own future by something so seemingly trivial as the choice of an insect spray". The consequences of actions like this one are astonishing, as Steffen *et al.* (2011) enumerate:

[...] climate change is only the tip of the iceberg. In addition to the carbon cycle, humans are (i) significantly altering several other biogeochemical, or element cycles, such as nitrogen, phosphorus and sulphur, that are fundamental to life on the Earth; (ii) strongly modifying the terrestrial water cycle by intercepting river flow from uplands to the sea and, through land-cover change, altering the water vapour flow from the land to the atmosphere; and (iii) likely driving the sixth major extinction event in Earth history. Taken together, these trends are strong evidence that humankind, our own species, has become so large and active that it now rivals some of the great forces of Nature in its impact on the functioning of the Earth system (Steffen *et al.*, 2011, 843).

The 2030 Agenda for Sustainable Development (Carpentier; Braun, 2020) calls for urgent action to transform food systems through more sustainable practices, particularly in relation to pesticide use. Excessive reliance on chemical pesticides can lead to environmental degradation, loss of biodiversity, and negative health impacts. To address this, the agenda promotes sustainable agriculture, focusing on Goal 2: Zero Hunger, which encourages practices like integrated pest management to reduce pesticide dependence. This approach seeks to protect ecosystems, improve soil health, and ensure safe food production. Achieving these targets by 2030 is crucial for balancing food security with environmental sustainability, safeguarding both human health and the planet.

Despite this, the destruction of places and spaces has been trivialized. “Silent springs” have become common nowadays, but people do not complain about that. In recent decades, ecosystems around the world have experienced significant losses due to human activities, such as deforestation, overfishing, pollution, and land conversion for agriculture. The damages to biodiversity and the disruption of natural habitats have led to weakened ecosystem services, which are critical for clean water, fertile soil, and climate regulation. According to the United Nations Environment Programme (UNEP, 2021), nearly 75% of Earth’s land surface has been altered, severely impacting wildlife and natural processes. This degradation not only threatens the planet’s ecosystems but also human livelihoods and well-being, as the balance between nature and human development becomes increasingly strained. By thinking over those problems, one can try, as proposes Tuan (2014, p. 4), “seeking to understand the mutual and current consequences of the relation between our life and space and place”, to revert actions.

Nevertheless, the consequences of the Anthropocene are still denied by many people, and so is the same Anthropocene, that has been considered inexistent by a group of scientists who pretend to unknow “that scientific evidence by its very nature is incomplete and scientists will inevitably disagree on what constitutes certain proof of harm” (Lear, p. xix).

How to follow Rachel Carson’s warning nowadays

It has been sixty years since the publication of *Silent Spring*, but the warning is more than ever fresh. Hopefully this book is available on some sites on the Internet, so its message can be widely spread. For “[i]n today’s society, marked by the use of the Internet, where the capacity for dialogue and contact with people goes beyond physical limits, the formation of common interest groups is no longer conditioned to be in the same space as it used to be in other times” (Thomé; Rodrigues, 2020, p. 4).

Whilst the sense of urgency in dealing with ecological issues and spreading eco-criticism has increased, problems have become more serious. In 1972, MIT team engaged with *The Club of Rome* had just concluded: “Given the finite and diminishing stock of nonrenewable resources and the finite space of our globe, the principle must be generally accepted that growing numbers of people will eventually imply a lower standard of living and a more complex problematique” (Meadows *et al.*, 1972, p. 191).

The path chosen by people had been the capitalist model based on consumerism, which caused since its beginning the environmental crisis that hits all Nature, comprising humankind. But beyond this huge problem, “[c]limate change has brought into sharp focus the capability of contemporary human civilization to influence the environment at the scale of the Earth as a single, evolving planetary system” (Steffen *et al.*, 2011, p. 842).

The world is struggling for its survival. Conferences on ecological crises are held all over the world, but with no practical results. Recently (June of 2024), the South of Brazil had faced huge floods provoked by ecological imbalance and bad political decisions about the agricultural model. If people want food and health for their descendants and successors, they must rethink their lives. It must be suggested to politicians, companies, bank managers and entrepreneurs that their first and most important task could be reading *Silent Spring* with

open hearts. Because no matter if their decisions prioritize money, they are all humanity accomplices and if they don't follow the warnings, they too will suffer the consequences.

On the other hand, although ecological problems increase at geometric progression, humankind's creativity can still find ways to solve a few of them. There are some optimistic ideas brought by scientific thinkers such as Fabio Rubio Scarano –Professor of Ecology at Universidade Federal do Rio de Janeiro and Unesco Chair on Futures Literacy: Planetary Wellbeing and Regenerative Anticipation of Museum of Tomorrow– who believes that there are even several reasons for hope on the sustainability and preservation of ecosystems. Here are some of his optimistic ideas (Scarano, 2024): 1. Nature as an ally: Scarano sees nature as an essential ally in combating climate change. He argues that by restoring degraded ecosystems and preserving biodiversity, we can increase the resilience of the planet. Ecological restoration is not only possible, but a viable and effective solution; 2. Integration of science and decision making: Scarano is optimistic about the growing appreciation of science to guide public policies. He believes that there is an advance in dialogue between scientists and decision makers, which can lead to more effective measures to preserve the environment; 3. Nature-based solutions: Scarano is a strong advocate of nature-based solutions, such as forest restoration and mangrove conservation, which can help mitigate the effects of climate change, improve the quality of life of communities and promote biodiversity. 4. Education and Social Mobilization: another point of optimism is the increase in environmental awareness between younger generations and the growing global mobilization for climate actions. Scarano points out that environmental education plays a key role in creating a more conscious society prepared to deal with ecological challenges; 5. Technology and Sustainable Innovation: he also believes that technological innovations, when oriented to sustainability, can bring major advances in environmental preservation. He welcomes the use of green technologies and sustainable agroforestry practices that respect nature and help in the recovery of ecosystems. These ideas reflect the view that, with coordinated action, education and science, it is still possible to reverse environmental damage and move toward a more sustainable future.

Carson's fable induces transformative learning, which can be a self-directed learning for adults that, in the meanings of Dirkx *et al.* (2006), comprises:

1. recognition that an alternative way of understanding may provide new insights into a problem; 2. context awareness of the sources, nature, and consequences of an established belief; 3. critical reflection of the established belief's supporting epistemic assumptions; 4. validating a new belief by an empirical test of the truth of its claims, when feasible, or by a broad-based, continuing, discursive assessment of its justification to arrive at a tentative best judgment; 5. coping with anxiety over the consequences of taking action; and 6. taking reflective action on the validated belief (Dirkx *et al.*, 2006, p. 124).

When applied to ecological concerns, transformative learning is a way of inducing social transformations by showing to the public a problem that affects all, giving new approaches to face it and taking different actions. As those academics say, "This view suggests a more integrated and holistic understanding of subjectivity, one that reflects the intellectual, emotional, moral, and spiritual dimensions of our being in the world" (Dirkx *et al.*, 2006, p. 125). If the spread of Carson's fable touches people's inner sense of humanity, creative transformations of spaces and places for the improvement of Earth's health can give hope.

Conclusion

This paper is about research on Rachel Carson's book named *Silent Spring* that continues to be a reference for ecologic studies. Besides its great value as a literature work, it provides an intertextual discussion on the environmental problems that humankind is facing nowadays, which were warned sixty years ago by Carson. This study shows a new perspective of Carson's book that can be used as classroom material. Environmental education can also benefit from the updating of some consequences highlighted by Carson that this paper brings up.

On the other hand, it also points out the search for solutions that can still be available. By bringing together different points of view about this book's subject, it is also possible to demonstrate that literature, far away from being a sole branch of study, leads to a strong intercultural way of seeing humankind that allows the comprehension of many other fields.

The ecological issues exposed in Carson's work imply concepts of space and place, considering semantic changes imposed by cultural transformations, and reflections based on them to seek better living paths for both Nature and humankind. To update such information, some current events are also brought into debate.

The conclusion is that the diffusion of Carson's ideas can still help people to become aware of each individual and social responsibility, so to perform together for humanities and Nature's health.

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Submetido em: 09-06-2025

Publicado em: 10-04-2026