Beyond the Limits of Science: Literature and the Fight against the Environmental Crisis

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Abstract

Today's world faces a massive environmental crisis that threatens the very existence of all living beings on Earth. Addressing this complex challenge requires innovative solutions that go beyond the traditional approaches, which rely too heavily on exact sciences. Despite its unquestionable importance in generating effective solutions for everyday life, answering the great mysteries of the universe, and understanding the mechanisms that rule, affect, and direct the natural world, scientific knowledge often finds itself powerless in the face of the current environmental challenges. This paper argues that the crisis is not only ecological but also a failure of imagination—humanity's inability to envision alternative futures and connect with the long-term consequences of its actions and choices. Literature, with its deep historical connection to the natural world and its different elements, offers a way to bridge the gaps science leaves behind. More than a source of knowledge or entertainment, literature has the ability to shape minds, evoke empathy, and make the environmental crisis personal and urgent. This paper argues that literature is not just a nice addition to science but also a vital tool in fostering

the ethical reflection, emotional connection, and creative ideas humanity needs to tackle environmental damage and envision a better, greener future.

Keywords: environmental crisis, crisis of imagination, science, literature, environmental sustainability

Introduction

Humanity lives in a rather ironical situation. Nowadays, people know more about the current environmental crisis than at any other time. There is no scarcity of warnings about the dangerous situation of planet Earth. Repeated observations from ecologists and scientists emphasize unequivocally that the state of our planet is steadily worsening with each passing day. Numerous ecosystems critical to maintaining life on Earth are on the verge of collapse, posing a serious threat to the survival of all living beings. When it comes to the study of manifestations of the environmental crisis, tens of the world's most prestigious scientific bodies and leading academic institutions are on the front line. Nevertheless, notwithstanding all these endeavors to confront this dire crisis, the environment continues its downward trajectory. The looming environmental peril poses a real threat, not only to the survival of many forms of life, but also to the very future of human civilization.

The Limits of Science in Solving Environmental Problems

One of the problems of this era is the privileging of science over all other ways of human inquiry. Science is undoubtedly the most efficient approach humans have developed so far to the understanding of the mechanisms that rule, affect, and direct the world around them. No one can argue, for example, about the spectacular amazing successes of fundamental physics, quantum mechanics, astrophysics, evolutionary and molecular biology, and numerous other fields of scientific inquiry. However, the problem arises when individuals become deeply shaped by the

precision, calmness, beautiful clarity, and unchanging nature of these sciences and their conclusions. They grow entirely content with the answers at hand, excessively focused on outcomes, to the extent that they assume their ability to provide effective solutions to most, if not all of the challenges confronting their world today. In this regard, Stenmark Mikael, in *What is scientism?* States:

Our Western society has been so much shaped by scientific thought and discoveries. We not only depend particularly on science in our ways of living. Our thinking and attitude are also shaped by the theories and methods of science. The overwhelming intellectual and practical success of science that lie behind this impact of science on our culture have led some people to think that there are no limits to the competence of science, no limits to what can be achieved in the name of science. Or, if there are limits to the scientific enterprise, the idea is that science, at least, sets the boundaries for what we humans can ever achieve or know about reality. There is nothing outside the domain of science, nor is there any area of human life to which science cannot be applied (15).

Despite its unquestionable importance in generating effective solutions for everyday life and in answering the great mysteries of the universe, science finds itself powerless in the face of the existential environmental challenges that threaten the planet. The environmental crisis is an outcome of complex, often nonlinear, interactions between humans and their surroundings. Humanity's effective response to it necessitates more than just an understanding of the cause- effect relationship that constitutes the backbone of the scientific hypothesis. It rather necessitates a

deep and comprehensive analysis of the different factors that lead to it and the detrimental effects it generates, and this is not the way science functions.

Another reason why science seems helpless in front of the environmental crisis is its highly sophisticated language. The scientific conclusions science states about this crisis are addressed mainly to those who can understand them at a time when the environmental crisis has evolved into a worldwide concern necessitating the involvement of individuals from all walks of life, expertly trained and uneducated alike. In his book *A Brief History of Time*, Stephen Hawking draws attention to the difficult nature of science when he states that "in the nineteenth and twentieth century, science became too technical and mathematical for philosophers, or anyone else except a few specialists"(167). It is worth mentioning that this has not always been the case. From the ancient world, at least since Aristotle to the 19th century, before the concept of science acquired its modern form, scientists were called 'natural philosophers'. They read Greek and Latin poets, drawing knowledge and assumptions from a diverse array of influences including history and literature, alongside their own experiments and observations. They had the necessary abilities and agility to customize their discourse and share sophisticated concepts within their societies, ensuring accessibility for individuals with diverse intellectual capacities. However, Since the time scientists stopped calling what they do 'natural philosophy' and started calling it science, things changed and the understanding of the scientific discourse became a real challenge to a vast majority of people.

In his book *The Wealth of Nature: Environmental History and the Ecological Imagination,* Historian Donald Worster states the following:

We are facing a global crisis today not because of how ecosystems function but rather because of how our ethical systems function. Getting through the crisis requires understanding our impact on nature as precisely as possible, but even more, it requires understanding those ethical systems and using that understanding to reform them. Historians, along with literary scholars, anthropologists, and philosophers, cannot do the reforming, of course, but they can help with the understanding (27).

The environmental crisis, as Donald Worster suggests, is an ethical matter. To overcome it, people are in need of a precise analysis and a comprehensive understanding of the different behaviors that led to it. More than ever, humans now look to science for help. However, the problem with science is that it concerns itself mainly with bodies of facts and truths and not with abstract concepts. Its major role is to provide methodologically verifiable interpretations, to question certainties, and to trigger reflections about potentially observable, measurable and detectable issues related to a specific phenomenon, to systematically arrange them, and to show the operation of their general laws. Another issue regarding science is its tendency for producing neutral and objective results, often lacking depth in metaphysical considerations related to ethics, morality, and existential meaning.

Because it primarily describes rather than prescribes, science lacks the capacity to resolve the current environmental crises. The role of science is to describe what

really is rather than prescribe what ought to be. While providing a scientific description of urgent environmental challenges is essential as a necessary endeavor towards the solution, this endeavor alone cannot and will not bring about changes in the status of these challenges. A solution involves a decision and a decision, in this case, involves prescribing a course of action towards a "better" future for life on Earth. Science, because of its methodology and its objectivity, cannot offer a lot. In other words, science cannot dictate how humans should act and live their life, but only how they have acted or might act. In his book *Small is Beautiful*, the economist E.F. Schumacher puts this idea clearly when he says that: "Science cannot produce ideas by which we could live. Even the greatest ideas of science are nothing more than working hypotheses, useful for special research but completely inapplicable to the conduct of our lives or the interpretation of the world." (53)

In sum, scientific methodology, despite its undeniable successes, remains limited. A scientific explanation of a phenomenon may not offer a comprehensive understanding of it. Science's ability to understand how the natural world works does not necessarily mean that science is all-powerful and will eventually explain absolutely everything. While science excels at providing explanations based on empirical evidence, there are phenomena and questions that may lie beyond its scope. Science operates within a framework of observable and measurable phenomena, therefore it may overlook aspects of reality that are not easily quantifiable or reproducible in controlled experiments.

In his essay entitled *Reason in Science and Conduct*, Errol E. Harris identifies the results of relying on pure scientific knowledge while attempting to devise a solution to something of the nature of an environmental crisis:

The reduction of reason to a purely formal instrument and the belief that substantive knowledge can be derived only from sensuous observation produces a complete revolution in attitudes to morality and political ideals. For pure intellectual analysis is indifferent to good and bad, right or wrong, and provides no motives for action. Even Aristotle, who venerated reason, declared that pure intellect moves nothing. Moreover, qua purely analytic, it cannot be the source of any constructive conception of human nature (187).

The point is that science, understood in this way, can describe the state of the natural world, but scientists, using only the tools provided by proper scientific procedure cannot determine what they might want human values to be as opposed, perhaps, to what they actually are. In other words, scientists lack the capacity to establish the ethical framework in which human values are to be defined.

When confronted with an environmental challenge or a perplexing natural phenomenon, people frequently seek guidance from scientists first, placing unquestioning faith in their expertise, assuming it to be the sole remedy available to them. Nobody can deny the fact that the scientific revolution has been an enormous success, as it improved the health and prosperity of millions of people across the globe, and as it provided a clear understanding of the condition of the planet and the effects of humans on different ecosystems. Nonetheless, in the excitement of

achievements and discoveries, humans have forgotten that they are defined not only by intelligence alone and that their well-being and the well-being of their surroundings is guided not only by science, but also by conscience, feelings, ethics, and values ; areas that science is largely silent about.

The Environmental Crisis: A Crisis of the Imagination

Climate Change is the biggest danger modern humans have ever faced. Scientists from all over the world have been issuing such urgent warnings for decades. If global temperatures increase only 2 °C, sea levels will rise at least six meters, flooding hundreds of coastal cities and displacing millions of people worldwide. While such projections seem concrete, they are not easy to imagine or represent. Humans' inability to properly imagine the environmental crisis and the devastating effects it generates, makes responding to it an immense challenge.

"Let us make no mistake: the climate crisis is also a crisis of culture, and thus of the imagination," asserts anthropologist and novelist Amitav Ghosh at the outset of his 2016 polemic: *The Great Derangement: Climate Change and the Unthinkable* (9). In presenting this claim, Ghosh positions his book among the increasing number of analyses that tackle the environmental crisis through a narrative lens; a departure from the more prevalent approach rooted in science and technology. His objective is to explore why human imagination, particularly within the realm of literary fiction, has frequently struggled to grapple with what he perceives as the most significant crisis of our era: climate change. Ghosh calls this a failure of our collective imagination—a "great derangement" (4). He asserts that due to the

longstanding focus of the English literary tradition on individual protagonists, the novel form is inherently ill-equipped to effectively depict the vast-scale challenges posed by environmental issues and the Anthropocene. This failure of the dominant literary imagination, Ghosh argues, "will have to be counted as an aspect of the broader imaginative and cultural failure that lies at the heart of the climate crisis"(8).

Contemporary scholars express a growing concern over the ongoing struggle to forge paths toward a more sustainable world. They posit that this challenge may, to a significant extent, be attributed to a triple failure of imagination. First, the significant risks posed by the current environmental crisis, especially its long-term impacts on every aspect of life, seem difficult to comprehend and respond to sufficiently and effectively at the scales that matter (Milkoreit 249). Second, the absence of the sociological imagination— the ability to identify the social structures that continuously recreate and reinforce the current environmental conditions (Mills 23-24). Although these two failures concern the collective understanding of current realities, the third failure is about the collective inability to imagine a rich potential future, along with the various options and pathways that could lead toward it (Bendor 134-140).

To face the environmental crisis, environmentalists argue that humans need to think creatively and come up with new solutions that are outside the confines of current thinking. Humans today need more than just an understanding of the scientific facts about the environment; they need to understand how attitudes towards the environment are culturally shaped and how the environmental

discourse is generated, analyzed, debated, and circulated. This step necessitates imagination, which, due to its connection to diverse cognitive processes, such as learning, meaning-making, and creativity, can conceive ideas in the mind pertaining to things beyond sensory perception, including alternate or fictional realities.

Imagination has at least two functions. First, it helps individuals learn about the world as it is or was and to gain new knowledge through (re) construction ; second, it can serve as a form of freedom, or even resistance to reality. Fulfilling this second function, imagination can serve as a repository of ideas unrestricted by the limitations imposed by various forms of rationality, and can therefore pave the way for novelty and change. The ability of imagination to liberate individuals from the constraints of reality, by mentally creating alternatives, is pivotal in numerous social change processes. Together, these two functions of imagination allow individuals to both know reality and to possibly create transformative changes in it.

Literature and the Environment: An Old Tradition

Literature, imagination, and the environment have always been closely related. Throughout history, narratives, stories, poems, plays, and other forms of expression have all played a key role for imaginative ventures that helped humans connect to the natural world. Nature has consistently served as a reservoir of images, similes, and metaphors across all genres of literature. There exist notable literary works infused with a form of ecological sensitivity, prompting individuals to contemplate

the beauty and magnificence of nature. These works explore the symbiotic connection between nature and humans.

Today, more than ever, and because of the extreme nature of the current environmental crisis, there is a need for literature to play its role in connecting humans to the natural world. In *The Ecocriticism Reader*, Cheryll Glotfelty points out that in order to face the current environmental crisis, literature must update its concerns and literary scholars must change their ways, for working as usual is no longer acceptable:

We have reached the age of environmental limits, a time when the consequences of human actions are damaging the planet's basic life support systems. We are there. Either we change our ways or we face global catastrophe, destroying much beauty and exterminating countless fellow species in our headlong race to apocalypse. Many of us in colleges and universities worldwide find ourselves in a dilemma. Our temperaments and talents have deposited us in literature departments, but, as environmental problems compound, work as usual seems unconscionably frivolous. If we are not part of the solution, we are part of the problem (xxi).

In the same vein, Joseph W. Meeker in his *The Comedy of Survival: Studies in Literary Ecology* highlights the role of literature in bringing ecological awareness to humanity and argues its inseparability from nature and the ecological whole. He asserts that, as a unique human production, literature should be put at the service of the natural world, and to make it fulfill this duty, there should be a careful and honest examination of its influences upon the human-nature relationship:

Human beings are the earth's only literary creatures [...] If the creation of literature is an important characteristic of the human species, it should be examined carefully and honestly to discover its influence upon human behavior and the natural environment-- to determine what role... it plays in the welfare and survival of mankind and what insight it offers into human relationships with other species and with the world around us (25).

Down the ages, the relationship between humans and the natural world has been documented through literary works. Since antiquity, literature has served two main roles: To some, it is art for art's sake and to others it is the mirror that reflects the concerns of the age in which it is written. Great literature is always founded upon these two concepts. And since each era is marked by its unique compulsions, aspirations, tensions, fears, and logic, which characterize the works of that time, literature, as a form of expression that can last for ages and that can endure the hardships of history, has always been a powerful medium to store the achievements and experiences of the past and put them at the disposal of the next generations to build their sustainable world.

A number of historians and environmentalists today tend to link various strands of the current environmental thinking to old European Romanticism and American nature writing. James McKuscik, for example, in his *Green Writing: Romanticism and Ecology,* states that "British and American Literature of the nineteenth century, because it often seeks to address pertinent questions concerning the relationship

between humankind and the natural world, has become one of the most important terrains for the development of ecological literary criticism" (ix).

English Romantics and American nature writers were not simply singing the beauties of an idyllic countryside; they were seriously concerned about the potential harm to the environment, a concern heightened by the evident damage caused by the Industrial Revolution in England. At the time when scientists based their observations about the local impacts of industrialization on empiricism and the scientific methods that were honed during the Enlightenment, artists and intellectuals observed the changes around them and captured them in their works. Although they had not yet formulated contemporary environmental concerns, Romantic writers and poets demonstrated a keen awareness of environmental matters. The heat death of the universe in Lord Byron's *Darkness*, the joyous apocalypse at the end of Shelley's *Prometheus Unbound*, the destruction of humanity 'by deluge' in Book Five of William Wordsworth's *The Prelude*, and the geological separation of the British Isles from mainland Europe in Charlotte Smith's *Beachy Head* all incorporate images of environmental apocalypse, urging readers to reflect on the fragility of life on Earth.

Conclusion

Literature and the environment is a combination that may appear unusual and even illogical, because the field of environmental studies has often been associated with scientists than with writers and their texts. However, due to the complexity of the environmental crisis and the limits of science, many scholars believe that in order

to see things from different angles and to respond to the environmental predicaments of society, climate solutions cannot be left only to scientists, technocrats, and politicians. Lawrence Buell, for example, asserts that: "The success of all environmentalist efforts finally hinges not on 'some highly developed technology or some arcane new science' but on 'a state of mind': on attitudes, feelings, images, narratives" *(Writing for an Endangered World* 1*)*. Despite the fact that science provides a factual account of environmental threats and ways of countering them, it is the case that even scientists find themselves resorting, in so many cases, to their imagination and to that of others to inspire, to improve their productivity and creativity, and to see the bigger picture of the problem.

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