

Diamond and Potter: a discussion about the future of humanity

Marta Luciane Fischer¹, Cristiano Chiaramonti¹

1. Pontifícia Universidade Católica do Paraná, Curitiba/PR, Brasil.

Abstract

This theoretical-reflective essay promotes an unprecedented dialogue between Jared Diamond and Van Rensselaer Potter to analyze the collapse of the Rapa Nui civilization on Easter Island as a case study of the relationship between societies and the environment. From an exploratory literature review, environmental bioethics is discussed as a tool for sustainable decision-making. The idealized meeting between Diamond and Potter addresses five central themes: the collapse of the Rapa Nui, overpopulation, the imminence of ecocide, the risks of unethical technology, and learning from past collapses. The essay explores how socio-environmental disorganization and a lack of ethics can lead societies to collapse. Both authors stress the need to overcome anthropocentrism and recognize human beings as part of the ecosystem. The essay concludes with a call for education and collective ethics to prevent globalized civilization from repeating the mistakes of Easter Island.

Keywords: Natural resources. Population growth. Ecosystem. Bioethics.

Resumo

Diamond e Potter: um diálogo sobre o futuro da humanidade

Este ensaio teórico-reflexivo promove um diálogo inédito entre Jared Diamond e Van Rensselaer Potter para analisar o colapso da civilização Rapa Nui na Ilha de Páscoa como estudo de caso das relações entre sociedades e meio ambiente. Por meio de revisão bibliográfica exploratória, discute-se a bioética ambiental como ferramenta para decisões sustentáveis. O encontro idealizado entre Diamond e Potter aborda cinco temas centrais: o colapso de Rapa Nui, superpopulação, iminência do ecocídio, riscos da tecnologia sem ética e o aprendizado com colapsos passados. Explora-se como a desorganização socioambiental e a falta de ética podem levar sociedades ao colapso. Ambos os autores destacam a necessidade de superar o antropocentrismo e reconhecer o ser humano como parte do ecossistema. Conclui-se com um apelo à educação e à ética coletiva para evitar que a civilização globalizada repita os erros da Ilha de Páscoa.

Palavras-chave: Recursos naturais. Crescimento populacional. Ecossistema. Bioética.

Resumen

Diamond y Potter: un diálogo sobre el futuro de la humanidad

Este ensayo teórico-reflexivo promueve un diálogo inédito entre Jared Diamond y Van Rensselaer Potter para analizar el colapso de la civilización Rapa Nui en la Isla de Pascua como un estudio de caso de las relaciones entre las sociedades y el medio ambiente. A través de una revisión bibliográfica exploratoria, se discute la bioética ambiental como herramienta para la toma de decisiones sostenibles. El encuentro idealizado entre Diamond y Potter aborda cinco temas centrales: el colapso de Rapa Nui, la superpoblación, la inminencia del ecocidio, los riesgos de la tecnología sin ética y el aprendizaje con colapsos pasados. Se explora cómo la desorganización socioambiental y la falta de ética pueden llevar a las sociedades al colapso. Los autores destacan la necesidad de superar el antropocentrismo y reconocer al ser humano como parte del ecosistema. Se concluye con un llamamiento a la educación y la ética colectiva para evitar que la civilización globalizada repita los errores de la Isla de Pascua.

Palabras clave: Recursos naturales. Crecimiento demográfico. Ecosistema. Bioética.

The authors declare no conflict of interest.

This critical essay originated from a reflection on extreme natural events that have intensified vulnerabilities on a global scale. These phenomena are associated with climate change resulting from intense environmental alterations, especially in recent centuries, and support the expectation of a failure of the ecological processes that form life on Earth. The increasingly concrete imminence of the extinction of human civilization, as predicted by academics and activists at the end of the 20th century, was supported by the classic example of Easter Island's original community's collapse. The event has been widely studied, grounded in various theories, and taken as a legacy within the framework for reflection on decisions that benefit meeting priority needs, but not fundamental survival needs.

Collapse, understood as the degradation and rupture of complex systems, leads to the decline or disappearance of societies, ecosystems, and even the planet's habitability. Contemporary human civilization emerged from the transition from a hunter-gatherer lifestyle to agriculture about 10,000 years ago, accounting for only 5% of humanity's existence¹. The change in lifestyle led to the consolidation of a sedentary lifestyle and the development of complex societies, including cities, governments, and social organizations. Concomitantly, maintaining this system involved the domination and exploitation of nature as a resource, leading to ecosystem transformations and instability.

History is marked by the extinction of several hominid species, without this meaning the end of the human species. Therefore, the greatest risk we face may not be the destruction of civilization itself, as it has the potential to rebuild and transform itself¹, but rather environmental collapse and irreversible compromise of the conditions that sustain life on the planet, threatening not only human civilization but mainly the biodiversity that characterizes the Earth.

The scene observed for this dialogue was constructed based on the image of the moai, a set of more than 800 statues up to 10 m high and weighing up to 80 t, carved from volcanic

stone by the Rapa Nui people between the 13th and 17th centuries, and discovered in 1722 by the navigator Jacob Roggeveen. The moai have sparked archaeological interest and prompted scientific expeditions and analyses in the most diverse areas of knowledge. Easter Island, located in the Pacific Ocean, is 3,700 km from the Chilean coast and is possibly one of the most isolated territories on the planet. Its triangular shape includes three dormant volcanoes, several craters and hills, totaling 170 km². Its colonization began with people from Polynesia, probably from Mangareva, Pitcairn, and Henderson².

The Polynesians mastered navigation and the technology for building sailing canoes to transport people, animals, plants, and water. Despite lacking compasses, maps, and instruments, their ability to connect with natural elements allowed them to use environmental references for navigation. The Polynesian people who colonized Easter Island developed their own language, hieroglyphic writing system, and religion². Since then, the moai have raised questions about who carved them, why a seemingly resource-poor society would expend so much effort on their production, and how they were transported and erected. The Rapa Nui population peak is believed to have occurred around 1200-1500 AD, sustained by intense exploitation of natural resources. The massive deforestation, especially of local palm trees, led to environmental collapse, including soil erosion and the loss of food sources. Internal conflicts and clan wars exacerbated the social crisis. The arrival of Europeans in 1722, followed by disease and enslavement, accelerated the decline of the population and traditional organization².

Questioning what still needs to be discussed regarding the possibility of the self-destruction of human civilization, this critical essay, of a theoretical and reflective nature, innovatively promotes the meeting of the theoretical perspectives of biologists Jared Diamond² and Van Rensselaer Potter^{3,4} regarding a persistent concern about the risk to the planetary future in the face of human interference in natural

processes. Thus, through an exploratory literature review, the aim was to promote convergence among the assumptions of environmental bioethics, reflection on solutions that add ethical value, and the community's involvement in decisions about how, how much, and why to use nature.

The confluence of Diamond and Potter's perspectives stems from their status as polymaths, as they consolidated their academic careers in bench research, particularly in biochemistry and physiology. However, they have shown interest in evolutionary biology, ecology, and ethics, having disseminated their ideas in the scientific literature and carried out numerous research projects. Although Potter was born in 1911, just over 20 years before Diamond, both experienced the rise of American capitalism in the post-World War II era and the mobilization of the scientific community to warn of the risks posed by excesses against nature.

The idealized meeting between Diamond and Potter takes place in five moments that address crucial issues for the management of planetary life: the mystery surrounding the collapse of the Rapa Nui civilization; the impact of overpopulation; the imminence of ecocide; the risks of technological development devoid of ethical values; and, finally, how learning from past collapses can guide the technological and globalized civilization in reflecting on the future of human civilization and planetary life.

Stone witnesses: what do the moai have to say?

In his work *Collapse: How Societies Choose to Fail or Succeed* (2005), biologist Jared Diamond fostered questioning of the reasons why some civilizations collapse while others overcome complex challenges and prosper. The analysis of various societies throughout history, including the Maya, the Anasazi, the Vikings of Greenland, and modern societies such as Rwanda and Haiti, has indicated that there are concomitant conditions that facilitate the feasibility of mitigating solutions².

Diamond incorporates the Rapa Nui civilization, considered one of the most emblematic in history, into his analysis, stimulating the scientific community to engage in everything from theoretical reflections^{5,6} to the support of mathematical models^{7,8} in search of an explanation for its collapse.

The extreme insularity and environmental exhaustion were compounded by the fact that they constituted a complex society capable of building imposing stone statues that required a great mobilization of physical and material resources. The moai expressed the organizational capacity of the clans. They served as markers of social prestige, while also requiring the sharing of material and human resources, both in construction and in the biological maintenance of builders and transporters. This dynamic demanded a system capable of articulating the island's economy around competition for the extraction and production of natural resources. The growing cultural sophistication, coupled with interclan ideologies and disputes, limited the adoption of a long-term perspective and may have contributed to the collapse of society. Diamond relies on evidence that the overexploitation of nature, especially complete deforestation, led to a scarcity of wood for canoes and fuel, exacerbating famine, internal conflicts, and possibly even cannibalism.

Multidisciplinary studies of Easter Island, developed over a century ago, represent a microcosm of the environmental and social challenges faced by other societies Diamond analyzed, such as feudal Japan and medieval Iceland. The ability to reverse environmental degradation supports the hypothesis that the collapse is not solely due to ecological factors. The fact that the inhabitants of Easter Island have failed to prevent the destruction of their ecosystem underscores the warning that ecological choices can determine a society's fate².

While the repercussions of Diamond's ideas have stimulated numerous academic debates in the last two decades⁶⁻⁹, the phenomenon was already of archaeological and historical interest since the beginning of the 20th century.

To the evidence about social organization, agricultural practices, and the impacts of European contact was added the hypothesis of environmental depletion⁶. Souza Neto⁶ pointed out that major catastrophes are multifactorial and that their effects can intensify depending on the context in which they unfold. Therefore, the legacy of the Rapa Nui experience may be innocuous if relationships are not established with the moment in which it is inserted. Thus, overcoming simplistic and deterministic perspectives, interdisciplinary approaches have incorporated social, political, economic, and religious information into the meeting scenario for debate about the future of humanity⁹.

Diamond considers archaeological data attesting to the island's past exuberant and diverse biodiversity, coupled with an estimate of 30,000 inhabitants, in contrast to Jacob Roggeveen's perplexed accounts of the island's aridity and just over 2,000 inhabitants. Although Diamond's perspectives point to a "distraction" on the part of governance and the population regarding resource depletion, it is possible that the priority of the moment shifted the problem to a secondary solution, even with knowledge that resources were being depleted².

Historical evidence, also considered by Diamond, points to the development of resilient and technological strategies to improve agricultural processes, such as composting, fertilization, and manure, in addition to innovative practices, such as the construction of "stone gardens" to conserve water and protect crops, which suggest an intention to maintain resources and awareness of the fragility existing on the island. However, Diamond questions whether these solutions, although innovative and effective in principle, could have created a false sense of security, thereby masking the need for broader, more systemic changes, the postponement of which would culminate in irreversible problems.

In addition to the environmental crisis, the population's isolation, as outlined in the theory of islands¹⁰, is considered a relevant conditioning factor. In addition to restricting communication with neighboring nations and hindering the transfer of technology, cooperation, and

sharing in times of crisis, geographic isolation compromises cultural and biodiversity mixing. Consequently, it makes the system vulnerable to external influences, such as rats and diseases introduced by colonizers. While the invasion of animal, plant, and pathogen species constitutes the second-leading cause of biodiversity loss¹¹ and numerous studies¹⁰ have assessed the impact of colonizers on the decimation of native peoples, the hypothesis is not supported by Diamond, who argues that civilization had already collapsed when the colonizers arrived.

Diamond points out that many societies do not recognize the signs of crisis in time or are anchored in traditions and ideologies that prevent change, so they believe that their way of life will always work, until it is too late. On Easter Island, the islanders' persistence in overexploitation, rooted in stubbornness concerning error and value conflicts, anchored in an individual status quo, legitimized actions inconsistent with the maintenance of life. Hanazaki⁵ agrees with Diamond that sustainability depends on the ability to observe and respond to environmental changes, but also suggests that analyzing multiple possible courses of action is only possible after reaching a critical point. To achieve sustainability, it is essential to avoid negative impacts in the medium and long term and to learn from changes.

Human beings are the cancer of the planet

Potter's contribution to the discussion of the factors that led to the collapse of the Rapa Nui civilization suggests that what happened locally is only a symptom of a larger problem: humanity's destructive relationship with the planet, especially driven by population growth. Potter points to the density of the human population as a factor contributing to violence against the natural environment, making it unsuitable for the reproduction and development of plants, animals, and human beings.

While Potter had a background in biochemistry and a consolidated career in oncology, recognizing himself as a bench researcher and reductionist

biologist, he was one of the forerunners of bioethics. Potter consolidated his work in two publications: *Bioethics: Bridge to the Future* (1971)³ and *Global Bioethics: Building on the Leopold Legacy* (1988)⁴. In both, he emphasized the importance of bioethics as practical ethics for complex problems. His reflection, conducted from the microcosm represented by the biochemical systems that maintain the integrity of the biological system, highlighted the risk of cancerous cells in dysfunctions that compromised the balance of healthy cells. The analogous transposition of this biological observation to human actions, enabled by technology, which prioritized the resolution of specific problems but could affect the long-term balance of the ecosystem, led to the conclusion that the impact of the human species on planet Earth is comparable to cancer in the human organism⁴. Potter transposes Diamond's fear of the collapse of human civilization onto the risk that humanity will cause the collapse of life as a whole.

Potter, inspired by researchers of the time, especially by Aldo Leopold's Land ethics perspective¹², conceives the planet as an organism, whose species would represent the cells, which, by analogy, would proliferate within a system regulated by complex feedback mechanisms. These could become dysfunctional if one form increased disproportionately. Potter also emphasizes that prolonging life could, in the near future, result in a population the planet cannot sustain, much like a cancerous cell that overwhelms healthy cells through excessive growth and the exhaustion of nutritional resources. Consequently, the decision between excessively exploiting resources, using collective intelligence, or exhausting available means could determine different possible forms of survival, in which the issue would not only be surviving, but also doing so with dignity¹³.

Potter proposes collective sharing in the creation of disciplinary knowledge tools, highlighting the importance of consensus to face emerging conflicts and dilemmas, such as overpopulation. At that time, the world population was approximately 4 billion. However, Malthusian theory predicted that, while the population grew exponentially, resources increased only arithmetically. In the absence of positive brakes, such as famine,

wars, or diseases, or preventive measures, such as sexual abstinence and late marriage, the population was estimated to double every 25 years. At this rate, it should reach an impressive 500 billion people in 2025¹⁴.

Based on the idea that science itself would create a solution in the future, society's disbelief in catastrophic expectations supported the prioritization of short-term needs, disregarding the environment in which it was embedded. Potter warned that the progress and improvement of the human being as an individual were being achieved at the expense of the collective. According to Carvalho, Carvalho, and Castro¹⁴, Malthus did not account for technological advances in agriculture that exponentially increased food production, the demographic transition with reduced birth rates, and economic growth and innovation. However, they point out that although the Malthusian catastrophe did not occur, the environmental impacts of the current development model remain urgent challenges requiring sustainable solutions. Furthermore, contemporary problems are not related to food scarcity but to new limitations, such as socioeconomic inequality, population aging, and global crises, such as pandemics.

The overpopulation of Easter Island was also discussed by authors such as Souza Neto⁶, who does not consider it an inevitable fate, but a management challenge. The lesson of the Rapa Nui collapse is that, without policies to balance population, resources, and culture, even in societies with advanced technologies, the mistake of exhausting one's own sustenance in the name of immediate objectives can be repeated. Souza Neto⁶ noted that the scientific community is divided over whether overpopulation was the primary cause of the collapse, since smaller societies can also collapse if they fail to balance exploitation and preservation.

Consequently, it is possible that, in this scenario, environmental degradation has resulted from priorities misaligned with sustainability. Diamond warns that Easter Island serves as a metaphor for Earth in the 21st century, whose planetary limits are already exposed in inequalities

and vulnerabilities, since 20% of the population consumes 80% of the resources. Just as the Rapa Nui depended on an isolated island, global interdependence requires coordinated solutions, in which ethics and governance transcend their borders to prevent the pursuit of unlimited growth from repeating the outcome, now on a cosmic scale.

Potter's thinking on overpopulation is aligned with the concerns of the historical moment, but his approach is more holistic, seeking to integrate science, ethics, and spirituality. Potter advocates for effective public policies to control population growth, guided by ethical and humanitarian principles, and to overcome religious influence. He warns that coercive or authoritarian measures can create social and moral problems and emphasizes the importance of education and awareness about family planning and the responsible use of nature. Reuveny and Decker¹³ reiterated that policies that promote reductions in birth rates, such as education, access to contraceptives, and improved living conditions, can help stabilize populations and reduce pressure on the environment, especially in countries with high population growth rates. According to Dalton and Coats⁹, population management can lead to smooth, stable trajectories for populations and resources, thereby avoiding boom-and-bust cycles. Although Diamond, like Potter, recognizes that population growth exacerbates the environmental crisis, he emphasizes that the way resources are exploited is an equally important, if not more so, factor.

Ecocide and its legacy

While Diamond's presentation of the Easter Island issue aligns with Potter's perspective on overpopulation, his reflection points to deliberate decisions in resource management. For Diamond, resource management is guided by societal adherence, which helps consolidate the concept of ecocide. Although his perspective has fostered research and warnings about humanity's direction, it has also garnered criticism, particularly for a simplistic response to

a complex issue, as demonstrated by Souza Neto⁶. However, Diamond presents a multidimensional, multidisciplinary perspective on the factors associated with collapse.

Additionally, he transposes his narrative to broader dimensions, such as the planet Earth being interpreted as a similar insular perspective, an island in the cosmos. Souza Neto⁶ supported the concept of ecocide as an unintentional socio-environmental self-destruction process, in which a society depletes its natural resources to the point of compromising its own survival. However, he acknowledged contrary arguments that the collapse was not solely the result of human action, but also influenced by external factors, such as climate change and invasive species. Furthermore, he questioned the reduction of the Rapa Nui's cultural complexity to mere "environmental incompetence." Souza Neto⁶ highlighted studies that link the construction of the statues to profound religious or political meanings, justifying the use of resources even in contexts of scarcity. Finally, the idea of "self-destruction" ignores the resilience of the society, which, even after the collapse, adapted by creating alternative social structures and agricultural techniques and perpetuating the Rapa Nui legacy through contemporary tourism, even though the original civilization no longer exists.

Diamond's legacy does not end with Easter Island, but serves as a starting point for relevant contemporary reflections. The collapse of a civilization is not necessarily related to the extinction of the entire population, but rather to a transformation in social and biological systems that enables adaptation to the planet's dynamics. However, Diamond emphasizes the compromise in society's quality of life and identity. Potter contributes to this discussion by warning of the degree of suffering and inequalities that can result from the rupture of integrated systems, especially if they are embedded in hierarchical power structures and in poor countries that depend on renewable resources and have high population rates⁹. Therefore, Potter emphasizes that ethical values are necessary to mediate technological development and the use of natural resources.

The diagnosis of ecological suicide, for Diamond, assumes the existence of neglected categories, such as deforestation, soil and water quality, hunting load, invasive species, population growth, climate change, toxic products, hunger, and the Earth's photosynthetic capacity. The suicide lies precisely in the deliberate attitude that legitimizes prioritizing decisions that are not necessarily priorities. Potter reiterates the idea that this behavior is not only irrational but a profound ethical failing of humanity, which legitimizes the vulnerability of the very society that is based on these values.

Biodiversity needs time to recover from socioeconomic exploitation, and in the face of overexploitation, especially resulting from human agglomerations in urban centers, the tendency is to collapse. According to Diamond², his visit to Easter Island left him stunned, leading him to question how the inhabitants failed to perceive the unfolding of exploitation and to imagine what they said when they felled the last palm tree.

The struggle of Easter Island society was not for its biological survival, but for social alternatives. The mobilization of knowledge and technology was useful in creating the statues, but excluded the environment from its role in sustaining society. This choice, considered and analyzed by Diamond, led to the understanding of ecological suicide. The competition for status, the lack of conservation policies, and the anthropocentric vision led to an unsustainable scenario. Diamond acknowledges that the Rapa Nui have adapted, but stresses that not to a sufficient degree to mitigate demographic and ecological collapse. Souza Neto⁶ also warned that the lesson of the Rapa Nui is not about "guilt," but about the need for balance: technologies and policies must coexist, so that an ethic of sustainability replaces the logic of unbridled exploitation. In a globalized world, where environmental risks are planetary, ecocide ceases to be an isolated metaphor and becomes an urgent warning.

Although ecological and demographic factors are important, Dalton and Coats⁹ stressed that institutions shape sustainability,

since they determine how societies respond to challenges of this kind. For the authors, the lack of private property and centralized management accelerated ecocide. Regarding the contemporary world, they warned that the absence of institutions capable of internalizing environmental costs could, on a global scale, lead to a repetition of Easter Island's fate. According to Dalton and Coats⁹, if the island's management had adopted the model of exclusive properties, there would be an incentive to preserve the forest, and the population and resources would stabilize. Potter's perspective contributes to this discussion by highlighting the ethical issue and questioning whether the problem is merely environmental or reflects humanity's moral inability to act collectively.

Technology dilemma: salvation or existential risk?

At this point in the discussion, it is already possible to outline the possible causes and consequences of Easter Island's legacy. However, Potter's perspective^{3,4} introduces an essential component: humanity's constant pursuit of progress. The technology that emerges as an emergency solution to all problems has been criticized as a short-term alternative that overlooks the long-term human relationship with the environment. However, given the historical moment, these ideas that demanded paradigm shifts based on future risks did not garner the support Potter intended, and the action of environmental bioethics has been delayed for five decades¹⁵.

Environmental bioethics, as a practical and multidisciplinary ethics, demands collective deliberation from the various actors that make up society and the environment. Long-term parameters must guide the debate, since short-term measures do not capture the complexity of biodiversity. However, Potter did not intend for bioethics to judge ethics concerning human actions and attitudes in their plurality, but rather to promote discussion of the various ways in which ethics is constructed. Therefore, the proposal of a

“general good” consisted of a criterion that Potter understood as supra-ethical, a system of general validity, or a biological wisdom, embraced by environmental bioethics in the scope of the various knowledges fragmented by modern science.

Potter’s and Diamond’s perspectives converge on the idea that the collapse of Easter Island represents a society’s responsibility for the socio-environmental imbalance, prioritizing the resolution of momentary, limited issues through technology as the best strategy. This conduct neglects other collective needs, obviously demonstrating a divergence of values. Stengers¹⁶ called the process that offers answers considered convincing to the demands of economic and social development, while at the same time making it impossible to recognize the existential reality of belonging to a complex biodiversity, constituted by simultaneously antagonistic and complementary relationships, the knowledge economy.

In the ecological context, there is an urgent need to create mechanisms for emergency ecosystem recovery, which often mask the real risks of overexploitation. Analogously, planet Earth is as insular as Easter Island; therefore, on a larger scale, one could question whether technology consolidated in unilateral knowledge for the sake of progress would be able to sustain vulnerable biodiversity.

Potter was inspired by Aldo Leopold’s ecological perspective¹² to demonstrate that caring for nature requires transcending viewing it as a resource and seeing it as a living being. For this, science needs to relearn how to listen to nature; the good life of any river may depend on the perception of its music and on preserving part of that music so it can be perceived. However, this is not yet considered by science. Reuveny and Decker¹³ noted that although innovation can increase the efficiency of resource use and the regenerative capacity of ecosystems, it is important not to rely solely on it to solve sustainability problems. In the case of Easter Island, although technological progress may have temporarily increased the island’s carrying capacity, Relvem and Decker¹³ warned that it may also have led to large fluctuations in population and resources, thus resulting in collapse. Technological progress must be approached cautiously and directed towards sustainable practices, but without

ignoring natural limits, as excessive dependence on it can lead to unpredictable fluctuations and even the collapse of the system.

Potter also highlights the role of science and technology in improving the quality of life, insofar as they allow society to advance without compromising environmental balance. Potter argues that reducing population growth is not enough; it is equally necessary to promote changes in consumption and production patterns to avoid waste and ensure the equitable distribution of essential goods. Environmental bioethics should guide humanity in building a sustainable future, in which decisions take into account not only immediate well-being, but also the consequences for future generations and for the planet as a whole.

Together for a feasible future

Potter’s and Diamond’s perspectives embrace the historical legacy of civilizations that have succumbed to or overcome complex problems, as well as the real risk of humanity’s collapse if it does not change its behavior. While Diamond proposes that we learn from societies that have avoided collapse by implementing sustainable resource management policies, Potter insists that only an ethical and cultural revolution can save the planet. Therefore, both face a dilemma: will the future of humanity be decided by science and technology or by a profound ethical transformation?

Researchers such as Motesharrei, Rivas, and Kalnay⁷ and Brander and Taylor⁸ have used predator-prey mathematical models to demonstrate that economic stratification increases ecological pressure and the risk of social collapse, as exemplified by cycles of abundance and famine on Easter Island. Motesharrei, Rivas, and Kalnay⁷ highlighted that the accumulation of wealth and disproportionate consumption by elites delay the perception of the environmental crisis, leading to an abrupt collapse when critical resources are depleted. As mitigating measures, they pointed to redistributive policies and a balance between production, environmental regeneration, and social justice. In turn, Potter³ argues that structural changes in environmental policies, management, collective cooperation, and ethical decisions in the consumption and

distribution of resources are more effective than relying solely on technology. Thus, Easter's lesson reinforces that survival depends not only on tools, but on the wisdom in using them, so it requires governance that prioritizes ecological balance and collective well-being¹⁷.

Diamond acknowledges that industries and governments can avoid collapses if they make courageous decisions, such as prioritizing sustainability over immediate profit. However, he warns that the future depends on ethical choices and global cooperation in the present, since reliance on superficial solutions could lead to irreversible crises. Hanazaki⁵ criticized Diamond's approach to large modern companies that he presented as examples of environmental success, questioning whether they truly adopt sustainable practices or merely use "greenwashing" strategies. As a counterargument, Diamond points to the role of public pressure and regulation, citing, among other examples, reductions in fossil fuel use and increases in investment in renewable energy.

The implementation of institutional reforms suggested by Motesharrei, Rivas, and Kalnay⁷ requires a clear and effective definition of ownership. For the authors, in countries dependent on natural resources and with weak institutions, the intervention of international organizations may be necessary to promote policies that balance economic growth with environmental conservation, such as economic diversification and investment in innovation in sectors less dependent on natural resources (for example, tourism). Concomitantly, society will be prepared to deal with periods of scarcity, such as droughts, floods, and wildfires, preventing violent conflicts, social instability, and mass migrations. It is worth highlighting that all these issues are already part of the agenda of international agreements such as the 2030 Agenda, which demonstrates that both leaders and other components of society are aware of the risks and mitigating paths, and leads us once again to question whether daily decisions, both individual and collective, are still prioritizing the resolution of short-term problems.

Deterministic, homogenized, and rigid solutions are unsustainable. Since understanding civilizations requires understanding their singularity, plurality, and complexity, Potter and Diamond agree that the path is education. Potter advocates for an

education that integrates science and moral values to form citizens capable of making responsible decisions for the future of the planet. For him, technological advancement is not enough; new generations need to understand the ethical consequences of their actions and commit to sustainability. Diamond, on the other hand, emphasizes education as a means of learning from past mistakes, highlighting the importance of teaching about sustainable resource management, global cooperation, and the environmental impacts of rampant consumption. Together, they both argue that only deep knowledge, coupled with a change in values, can lead humanity to a more balanced and sustainable future.

For Godoy¹⁸, competition and cooperation are natural phenomena, but society can become predominantly competitive or cooperative depending on the values transmitted through education. Therefore, education presupposes autonomy in choices and communication skills for cooperative deliberations^{19,20}. As a result of encouraging individual and collective engagement, the effectiveness of conservation policies is enhanced, and solutions are better adapted to local needs and realities⁷. Potter points out that the active participation of people in the formulation of sustainable policies is essential to balance progress and environmental responsibility. To this end, education and ethical awareness must mobilize the community in favor of fair and sustainable decisions⁶. For Diamond, engagement in collaborative resource management and decision-making strategies is indispensable, especially in an interdependent world, where problems such as climate change and resource scarcity require global solutions.

In the globalized, interconnected world, natural resources are finite and shared, and environmental impacts transcend borders, making ethics a matter of collective survival. The lesson of Easter Island is not only historical but also prophetic: just as the Rapa Nui depended on an isolated island, humanity depends on a single planet, and unbalanced exploitation foreshadows global-scale collapses. Environmental bioethics guides responsible consumption, collective decision-making, international cooperation, and sustainability policies that prioritize the long term over immediate results. Diamond summarizes

this imperative by stating that humankind is the cause of its environmental problems, but also the only one that can solve them. The choice is clear: either humankind learns from the past and replaces the logic of accumulation with an ethics of balance, or it becomes a prisoner of its own monuments to progress.

Final considerations

This essay has demonstrated that the collapse of the Easter Island civilization continues to serve as a global warning and should be taken as a legacy, prompting one to rethink how humanity interacts with its social and natural environment. Obviously, given multifactorial problems, while there is no single answer, attesting to the confluence of Potter's and Diamond's ideas was possible. Both transpose the isolated society of 30,000 inhabitants into a technological, globalized society of more than 8 billion, with advanced medicine, an international support network, and, above all, access to history as a legacy. This leads us to question whether it will even be possible to repeat the same mistake.

Potter's warnings, considered exaggerated and catastrophic, proved true within just five decades. Even so, society stands stunned by the high levels of pollution, temperature extremes, and water scarcity on a water planet that was previously recognized for its exuberant biodiversity and has withstood five major mass extinction events. The apparent "distraction" experienced today finds a parallel in the Rapa Nui people, insofar as short-term choices, motivated by economic and social interests, are pushing future needs to the bottom of the priority list, until they become irreversibly prioritized. The postponement of complex, plural, and global problems, inherent to

the sphere of action of environmental bioethics, does not correspond to ignorance, but possibly to a choice: that of investing in palliative measures in the expectation that a solution will consolidate in the articulation of future technology itself.

Is the current world, politically polarized, Eurocentric, and capitalist, a microcosm of the Rapa Nui civilization? Instead of moai, capital, industries, and weapons are built that demand the exhaustion of collective resources. The uncritical naturalization of marketing messages fosters social blindness by suppressing the perception that the planet is no longer the same, that nature is dangerous, and that collective action is pointless in a world that cultivates and nurtures individuality. People are being disconnected from nature and, consequently, from their essence, belonging, and sense of existence. Society alternates between the roles of agent and moral patient in responsibilities for the planetary future, depending on the interests of the self-managing system. Concomitantly, the system silences the voices of ecosystems as living systems, rendering them invisible and perpetuating the notion that they are problems to be solved. However, Potter and Diamond offer plausible predictions about commitment to complexity, based on attitudes that support long-term problem-solving.

The dialogue between Potter and Diamond complements each other in the message that actions are needed to bring and sustain values in the relationship of respect between humans and nature, and in the understanding that humankind is part of the environment, not superior to it or its owner. The two biologists, from two distinct generations, demonstrate that life is not restricted to cellular and molecular biochemical processes and, thus, overcome the belief that only the cell is life, conceiving it in its singular plurality as part of life.


We thank the Araucária Foundation for the Productivity Grant and CNPq for the master's scholarship.

References

1. Harari YN. *Sapiens: uma breve história da humanidade*. São Paulo: Companhia das Letras; 2015.
2. Diamond J. *Collapse: how societies choose to fail or succeed*. London: Penguin Books; 2011.

3. Potter VR. Bioética: ponte para o futuro. Zanella DC, trad. São Paulo: Edições Loyola; 2016.
4. Potter VR. Bioética global: construindo a partir do legado de Leopold. Bartalotti CC, trad. São Paulo: Edições Loyola; 2018.
5. Hanazaki N. Colapso: como as sociedades escolhem o sucesso ou o fracasso. *Ambient Soc* [Internet]. 2006 [acesso 13 mar 2025];9(2):45-67. DOI: 10.1590/S1414-753X2006000200010
6. Sousa Neto JMG. Fiapos de carne materna entre os dentes, ou a crônica do suicídio ambiental em Rapa Nui (Ilha de Páscoa). *Cad Hist* [Internet]. 2011 [acesso 13 mar 2025];8(8):23-45. Disponível: <https://bit.ly/4b09ZAc>
7. Motesharrei S, Rivas J, Kalnay E. Human and nature dynamics (HANDY): modeling inequality and use of resources in the collapse or sustainability of societies. *Ecol Econ* [Internet]. 2014 [acesso 13 mar 2025];101:90-102. DOI: 10.1016/j.ecolecon.2014.02.014
8. Brander JA, Taylor MS. The simple economics of Easter Island: a Ricardo-Malthus model of renewable resource use. *Am Econ Rev* [Internet]. 1998 [acesso 13 mar 2025];88(1):119-38. Disponível: <https://bit.ly/4cqY1R0>
9. Dalton TR, Coats RM. Could institutional reform have saved Easter Island? *J Evol Econ* [Internet]. 2000 [acesso 13 mar 2025];10(4):489-505. DOI: 10.1007/s001910000050
10. Owsley DW, Gill GW, Owsley SD. Biological effects of European contact on Easter Island. In: Larsen CS, Milner GR, organizers. *In the wake of contact: biological responses to conquest*. New York: Wiley-Liss; 1994. p. 161-77.
11. Calixto YTA. Considerações socio-ecológicas entre a Ilha de Páscoa e a sociedade atual: baseado no livro "Colapso" de Jared Diamond. *Akrópolis* [Internet]. 2023 [acesso 13 mar 2025];31(1):75-87. DOI: 10.25110/akropolis.v30i2-006
12. Leopold A. *A ética da Terra*. Curitiba: Appris; 2020.
13. Reuveny R, Decker CS. Easter Island: historical anecdote or warning for the future? *Ecol Econ* [Internet]. 2000 [acesso 13 mar 2025];35(2):271-87. DOI: 10.1016/S0921-8009(00)00202-0
14. Carvalho AC, Carvalho DF, Castro AC. Análise sobre crescimento populacional e transição demográfica: limites e divergências. *Conjecturas* [Internet]. 2022 [acesso 13 mar 2025];22(2):1-15. DOI: 10.53660/CONJ-751-C12
15. Fischer ML, Cunha T, Renk V, Sganzerla A, Santos JZD. Da ética ambiental à bioética ambiental: antecedentes, trajetórias e perspectivas. *Hist Ciênc Saúde-Manguinhos* [Internet]. 2017 [acesso 13 mar 2025];24(2):391-409. DOI: 10.1590/S0104-59702017000200005
16. Stengers I. *Uma outra ciência é possível: manifesto por uma desaceleração das ciências*. Rio de Janeiro: Bazar do Tempo; 2023.
17. Vasconcelos JC. Stephanie McLuhan e David Staines (eds.). 2005. *McLuhan por McLuhan: Conferências e Entrevistas Inéditas do Profeta da Globalização*. Interações. *Sociedade e as Novas Modernidades*. 2006;(10):151-3.
18. Godoy DFS. Ilha de Páscoa: experiências do passado como meio para pensar a crise ambiental contemporânea. *Rev FSA* [Internet]. 2021 [acesso 13 mar 2025];18(12):45-63. Disponível: <https://bit.ly/4asRtis>
19. Franco JLA. O que podemos fazer para evitar a destruição de nosso mundo? *Soc Estado* [Internet]. 2009 [acesso 13 mar 2025];24(1):75-95. DOI: 10.1590/S0102-69922009000100012
20. Jantsch MO, Schäffer BG, Bento W. Coexistência entre humanidade e ambiente: bioética na perspectiva de Potter. *Rev. bioét. (Impr.)* [Internet]. 2022 [acesso 13 mar 2025];30:366-72. DOI: 10.1590/1983-80422022302532PT

Marta Luciane Fischer – PhD – marta.fischer@pucpr.br

 0000-0002-1885-0535

Cristiano Chiamonti – Master – cristianochiamont@hotmail.com

 0009-0004-5784-8130

Correspondence

Marta Luciane Fischer – Rua Imaculada Conceição, 1155, Prado Velho. CEP 80215-901. Curitiba/PR, Brasil.

Contribution of the authors

Marta Luciane Fischer and Cristiano Chiamonti participated equally in the research conception, data collection, theoretical reflections, writing and final revision.

Data availability: The data are available upon request to the corresponding author due to ethical restrictions.

Editor in charge: Dilza Teresinha Ambrós Ribeiro

Received: 3.17.2025

Revised: 9.19.2025

Approved: 9.22.2025