Our Environment: Everything Is Natural on Earth, but … Editorial Piece on Current and Future Soil and Environmental Research

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Editorial

Our Environment: Everything Is Natural on Earth, but . . . Editorial Piece on Current and Future Soil and Environmental Research

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When finishing the Topical Issue "New Research on Detection and Removal of Emerging Pollutants", some reflections came to my mind, which I include in the piece below.

According to what is generally accepted as a paradigm in current science, all the matter in the known universe derived from the big bang [1], which we will agree to consider as a natural event, without external intervention; therefore, we could say that everything that derived, derives, and will derive from that initial event, is natural.

This is the case with the formation and evolution of galaxies, including the Milky Way, and within it the Solar System, and in it the Earth.

The multiple impacts of meteorites and all sorts of other material entities received by our planet during its formation and past evolution undoubtedly qualify as natural events.

At one point, the events associated with atoms that interacted with others to form certain molecules that culminated in nucleic acids and some proteins, could be linked to the "miracle" of the emergence of life [2]. All this emerged from the original elements of the puzzle (the particles and/or forces derived from the big bang); therefore, it would continue to remain natural.

Later, specific living beings were able to drastically modify the planet's atmosphere by releasing oxygen as a result of their metabolic processes [3]. Perhaps that moment can be seen as the first time that living beings caused a major change in the Earth's atmosphere. It was itself natural, since its origin lay in beings made up of atoms derived from the particles generated/released at the time of the big bang.

Previous mass extinctions were related to past events, such as meteorite impacts, which can certainly be considered natural.

In the present, we see that different animals have the ability to build, be it nests (like those of various birds) [4] or termite mounds [5], while some others can use tools [6], grow mushrooms on fragments of vegetables [7], etc. Indeed, we can classify it as a natural process.

Of course, the lead in terms of construction is taken by human beings. However, the truth is that everything derived from the human mind, whether material objects or abstract constructions, such as ethics, morality, the concepts of good and evil, would be natural, since the human nervous system is made up of associations of molecules in turn made up of atoms, all of them derived from particles that began their evolution in the big bang.

On the other hand, both due to processes of struggle for survival and mutual aid (which can be observed from the level of microorganisms to others of greater complexity) [8,9], the current human adaptation to the environment, its future persistence and all its eventualities reach beyond evolution through mutations. As I comment in a book that is being prepared, certain behavioral, social and cultural changes, what we could call "social mutations", in the case of humans, give rise to much shorter term (and therefore accelerated) effects than mutations of a biological nature.

It is equally evident that what is achieved through science and technology (such as space travel) goes far beyond what exclusively biological evolution provides. Additionally,

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the effects of technical and industrial processes sometimes mean new drastic changes at the environmental level, such as accelerated global warming in the troposphere. As noted above, other living beings gave rise to substantial modifications in the terrestrial gaseous sphere in the past, caused by the large-scale release of oxygen into our atmosphere.

Given that everything related to science, techniques and industry derives from our mind, with a nervous system made up of molecules and atoms derived from the big bang, everything is natural.

Therefore, weapons of mass destruction, all synthetic poisons, and any substance or anthropic process that can lead to extinction to humans and other species can also be considered as natural.

Whatever we do will derive from our thoughts; therefore, it will be natural. Whatever we do, it will be part of the future of our species, of our evolutionary course on this planet.

However, I believe that we still have some decision-making capacity over part of our future as living beings, as humans living in the environment of planet Earth.

Despite the awareness that we, as humans (more than 8 billion today), do not decide on something as crucial as our own survival as a species, and on the sustainability of life in general on the planet, but rather that a limited number of humans are the ones who make the decisions that affect the whole group, I think we can mention some related reflections on these ideas.

In some previous publications, I raised certain political and financial aspects that affect the management of waste and pollutants [10–12], as well as the need for politicians to intervene effectively to control risks and unsustainable processes for the planet [13]. The term "politicians" refers to actors who have the power to affect change. If, in practice, an elite (economic or of any other nature) has the power and capacity to act effectively, the restricted group should be the object of the interpellation.

Although ancient philosophers (such as Plato) characterized the government of philosophers as the panacea, I will not recommend a government of scientists as a solution to current problems. However, it should be mandatory that political decisions, at the level of states and supranational entities (of the UN style), consider the survival of the human species, of other species, of fundamental biodiversity, and of the planet, based on a mandatory (imperative for any state) and broad scientific consensus. On the other hand, if scientific consensus exists but no action is taken by individuals with power and the ability to bring about effective changes, such knowledge would remain decorative and non-functional.

Various authors have written interesting articles on the relationship between scientists and political power, such as de-Kerckhove et al. [14].

Beyond the above considerations, and as I comment in the book being prepared, I think it is clear that, at this point, the survival of humans as a species does not essentially and exclusively depend on the reproductive capacity of individuals. In fact, multiple social movements focus on or dedicate themselves to the care of people affected by physical and mental illnesses. In addition, some people opt for ways of life that do not involve their own reproduction. Additionally, these social movements and individuals contribute to making the planet's environment (and therefore also the humans who inhabit it and will inhabit it) more sustainable. Darwinian selective pressure and the positive effects of intra- and inter-species mutual aid may be complex, and perhaps inextricable today, as we intend to evaluate or predict the global effect in the medium and long term.

To conclude, I must say that on a personal level, as a person and as a scientist, I am hopeful about the viability and continuity of human beings and the planet as a whole.

Specifically, as a scientist, I believe that I should continue contributing "betting tickets" to what at one point could be a winning number of the "lottery" of positive results for the planet's environment, for biodiversity, and for the persistence of the human species within a sustainable framework.

Birth is often seen as a 'lottery'. However, in humans (and other species), individuals each contribute to society differently, with some contributions promoting the continued

survival of our species and the planet. In particular, I will continue working on investigating environmental issues, mainly continuing along the lines of research in which I have participated in recent years, including emerging pollutants and global risks due to pollutants of abiotic and biotic origin, through research projects and publications or by editing papers in scientific journals [15–23], including those in the Topical Issue "New Research on Detection and Removal of Emerging Pollutants" [24], as well as writing/editing books [25–27]. Sometimes, some of these tasks can be difficult, but I believe we should contribute as long as our work can be considered to be of value.

In view of the discussed factors, I continue to consider what I should work towards in the future. Specifically, despite the constraints we find, I will continue to expend as much energy as possible in researching, writing, reviewing, and editing in the fields of soil science and environmental science. Taking a hopeful and optimistic stance, I wish all of us luck in our scientific work and in its repercussions at the political level or in any instance where there exists effective power, as well as in the various individual and joint "lotteries" that affect life on our planet.

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