



Eco-Evo-Centrism: a new environmental philosophical approach

In the international theoretical debate on environmental philosophy and ethics scholars have different views: strong and weak anthropocentrism, ecocentrism, individualistic and holistic biocentrism. The key point of contention is the human being's place in nature.

A scientific –anyway alert to philosophic changes– outlook gave me the chance to elaborate a theory to overcome contrasts. I have called it Eco-Evo-Centrism to underline that the human being is both son of nature and the exponent of an evolutionary leap. The core of this approach is a view of the human being as the owner of new *emergent properties* arisen from relations. *Cultural evolution* sets him free from biological evolutionary laws, nevertheless it exposes him to the perils of *maladaptation*. The subsequent power of choice makes the human being responsible for his and the whole planet's future. In this dissertation the principal argumentations of this theory are summarized

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Introduction

Environmental philosophy may be defined as a process that draws knowledge from every human activity (science, literature, art, myth, etc.). It integrates interdisciplinary knowledge to state those principles useful to legislators in pursuing sustainability, balance, and harmony with nature. Environmental ethics is its engine. [1] Environmental philosophical reflections are important in debating many current questions like sustainable development, [2-3-4] and global climate change. [5-6-7] For example, thanks to the environmental philosophical reflection the definition of sustainable development has changed over time. [8] We could classify different environmental philosophy views as different kind of anthropocentrism, biocentrism, and ecocentrism, [9] depending on how they consider the human being's place in nature. Other views, like eco-sociology [10] and theocentrism, [11] although some authors consider them apart, may be included into the above-cited three big categories, too. [12]

To establish an analytical environmental philosophy

we have to combine two apparently conflicting issues. [13] Looking at the world only with the eyes of a narrow scientific method we could have a distorted picture of reality. Plato himself in his allegory of the cave invited us to focus our attention to our mind and not to reality as it is. [14] In a more narrative way, also the well-known French author A. de Saint-Exupéry affirms that: "What is essential is [*sometimes*, Ed.] invisible to the eye". [15]

On the one hand our moral choices cannot directly derive from scientific data and evidence only. On the other, we cannot ground our moral thought only on the clay feet of subjectivity. Scientific knowledge is recognized as fundamental [16-17] to rightly place living organisms in nature, and to precisely know their interrelatedness. Then, since its very beginning

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environmental philosophy has involved many scientists, first of all naturalists and biologists. [18] To go beyond this standstill we have to both base our reasoning on science and recognize the non-material aspects of nature and humanity.

Rationale

The first pillar of my analytical environmental philosophy are both reason and empiricism. Without any adequate check method every assertion could be wrong. Think about a simple example. In the Middle Ages people believed the Earth was flat. Nevertheless, utilizing reasoning and measurements, people had to realize the Earth had to be, at least, convex. In fact, seeing distant ships in clear days people had to note only sails, not hulls. They had to note the changing starry sky moving to North, or South, etc. Many centuries before the Middle Ages ancient Greeks were able to recognize the spherical Earth shape. Moreover, they achieved quite accurate evaluations, as the Earth's diameter and the distance from the Earth to the Moon.

The second pillar of my environmental philosophy is a more *critical approach towards science*. Modern science affirmed that a phenomenon does not exist if it is not measurable. Logic tells us differently: if we have not found an objective and/or rational explanation about a paranormal phenomenon, then we cannot assert neither that it is real, nor that it is not. While waiting for a future outcome, we have to suspend any declaration. This approach leaves the door open to a quantity of problems and invites us to discuss once again about the human being's place in nature and his role towards other entities.

Human being's place in nature

According to the Hebraic-Christian tradition, species are created by God in a fixed mode. In this vision nature was arranged in a ladder (*scala naturae*) starting from minerals, passing through fungi, plants, and animals. At the apex stood human beings. This vision dates back to Aristotle, the highest incisive observer of nature in the Greek ancient world. Nevertheless, in spite of his innovative abilities to examine in depth the concept

of science –e.g. when he wrote: “Hence, experience appears to be nearly similar to science and art. But science and art proceed to men through experience”–, [20] Aristotle depicted a hierarchical order in which less perfect organisms existed for the sake of superiors. “[...] we may conclude [...] that plants are created for the sake of animals, and animals for the sake of men [...]”. [21] Evidently, otherwise from what happened about the spherical shape of the Earth, life was too complex to being understood thanks to observation and reason.

Christian thinkers found this argument useful for their theology, and extended the linear vision of the ladder of nature in a more comprehensive *Great Chain of Beings*. Since Bible affirmed that man was created in the image of God, they placed him between material things and spiritual entities. In the lower half they placed inferior living beings –like plants, and animals considered mere machines–, in the upper half they placed series of supernatural beings –like angels, and archangels– until arriving to God. Despite the elaborated conjecture, in the real world their conclusions did not work. When clergymen began to look at nature to glorifying God they found at least three inconsistencies in the Christian tradition: clear injustices, too much diversity of animals and plants, fossils embedded in rocks. [22]

What science tells us

According to the contemporary physics all living organisms, human being included, obey the same physical laws as all things do, whether inorganic or not, in the universe. Chemistry has clarified that atoms in living organisms are the same chemical elements we find in the inorganic world and in the entire universe. Organic and biological chemistry has clarified that macromolecules in all living beings are similar. Genetics has clarified that we share the same genetic code with all other living beings. Ecology has clarified that no organism –or species– could live alone. Human being is not an exception. We are tied to the others in a thick web of relations, loops, and feedbacks. In the ecological whole, human being has his own peculiarities just as any other living beings have, and he may be a resource or a damage for ecosystems, depending



on his impact. In summary science has moved human being away from the center of the universe. Our place is no longer at the top of some sort of *scala naturae*, nor at the center of the Great Chain of Beings. For these reasons, biocentrism affirms that we do not have anything special. We think we are superior because we are judging ourselves. Moreover, we are less important compared to *key species*, the extinction of which would cause their whole ecosystem collapse. Conversely, if we became extinct life on Earth will normally continue. Actually, the situation will be better to many other species, because we are occupying wide ecological niches, and we are consuming a great deal of natural resources. Some misanthropes go beyond arguing that our departure would be greeted with enthusiasm by the natural world. [23]

Nevertheless, we have so far missed something important. If we look at nature with a more holistic – anyhow objective – eye, we find a human being characterized by some evolutionary novelties that make him a special organism – capable to enfranchise himself from biological evolutionary laws.

Emergent properties

An object possesses emergent properties if it shows more properties than the sum of the properties of its parts. A living cell has the emergent property by the

name of *life*. Unlike a stone, a living cell eats, eliminates wastes, reproduces, and so forth. In other terms a cell is a living organism, the stone is a non-living thing. Comparing a stone and a living cell, we could argue that life is a property that depends on the complex macromolecules the cell has and the stone has not. I affirm that this reasoning is wrong. A dead cell has the same macromolecules as the living cell but it does not eat, it does not eliminate wastes, it does not reproduce. The real difference is about relations among parts. Both macromolecules in a dead cell, and little inorganic molecules in a stone, are simply linked together by cohesion forces. Conversely, macromolecules in a living cell are parts of networks of relations.

Emergent properties are almost everywhere. Animals have many of them, like view and ambulation. They arise from relations among cells, tissues, organs. Some properties emerge from relations among organisms. Ecosystems have emergent properties thanks to relations among flora, fauna, and the inorganic environment. Woods are not only a sum of trees, riverbanks are not only barriers against floods. From a wood and a riverbank arise new emergent properties by the name of ecosystem services like air and water depuration.

We find emergent properties in inorganic things, too. A clock has the property to show time. A car has the property to carry people and things from one place to another. Moreover, it is not necessary a design to find emergent properties in objects. New properties emerge from inorganic things if they are sufficiently



complex, and their parts are sufficiently interrelated, like big cities are. As G. West said in his 2011 TED speech, *The surprising math of cities and corporations*: “If you double the size of a city [...] then systematically you get a 15% increase in wages, wealth, number of AIDS cases, number of police, anything you can think of. It goes up by 15%, and you have a 15% savings on the infrastructure.” [24]

In summary, emergent properties have nothing supernatural. Life appears incredible to us, even miraculous, because of its extreme complexity. Life is a natural fact. It is intrinsic in nature.

Emergent properties are everywhere. Since evolution has a general direction towards an increasing complexity, [25] many of them appeared in the past, and many of them will appear in the future. Some of the past events represented very important novelties. Life is the most important one. Its preparation lasted hundreds of millions of years, but after its appearance nothing was like before. Every piece of land on Earth was colonized by living organisms.

From then on biological evolution replaced chemical evolution, and a quantity of new emergent properties arose. Living cells started linking together. Inner and outer symbiosis appeared. Multicellular organisms came into the world, and with them a quantity of emergent properties arose. Properties like the ability in using energy more efficiently, inhabiting extreme environment, mating, swimming, flying, and so forth. The list is endless.

Then, after hundreds of millions of years, another great emergent property arose. It happened only few millions of year ago, a short period geologically speaking, but from then on lots of events have happened. It is *culture*. Culture is not a human being’s prerogative. Many vertebrates, like mammals and birds, show their cultural traits. Think about bowerbirds, and their aesthetic ability; or dolphins, and their ability to live in complex societies.

Evolution means not only to adapt to a changing environment, *evolution means to start new relations, to find new ways of cooperation, to invent something completely new, too.*

Like chemical evolution, which lasted hundreds of millions of years to give birth to life, biological

evolution lasted hundreds of millions of years to produce a cellular nervous aggregate so complex to be able to recognize itself, to ask questions about itself, its physical body, and all the objects it sees or imagines around it. *Consciousness* was born. Just as culture, consciousness is not a human prerogative. All apes show consciousness when they identify themselves in front of mirrors.

Being aware of our non-superiority, no one may deny that human being’s consciousness and culture are more advanced compared with all animal species. Hence, as a matter of fact we cannot believe we are superior, nevertheless we may certainly affirm we own a special status. We represent an evolutionary leap.

Biological evolution limits

In nature, insurmountable physical limits do exist. Paws have problems to bear the weight of an elephant-sized animal. No birds can fly over a definite altitude. Nevertheless, sometimes, an odd phenomenon appears. Biologists call it hyperthelia, without providing a convincing explanation yet. A useful characteristic starts to get bigger and bigger from generation to generation, having some evolutionary advantage. But it never stops. As time passes by, it becomes exaggerated and starts to be detrimental. This is the case of the saber-toothed cats, a group of ancient felines, and of *Megaloceros giganteus*, a big deer that died because of their huge canines and antlers, respectively.

Our brain could be a case of hyperthelia. Geologically speaking its growth has been incredible, passing from 450 cm³ in *Australopithecus africanus*, an early hominid lived more than 3 million of years ago, to the 900 cm³ of *Homo erectus*, a hominin living nearly one million of years ago, and the 1200 cm³ of the volume of a modern *Homo sapiens sapiens*. This growth would have been a big problem for pregnant women –whose conditions had already worsened by the pelvic girdle restriction due to the upright position– if an evolutionary stratagem had not helped them. Some authors, as Robin Dunbar, have hypothesized that children come into the world prematurely. Dunbar wrote: “A baby human is born when its brain is less than one-third its final size. The rest of its brain development continues over the first year

of life. In fact, if we calculate the equivalent gestation period for a conventional mammal of our brain size, we arrive at a mind-boggling 21-month pregnancy.” [26] *The growth of our brain could not be endless. As a recent scientific research hypothesize: “The laws of physics may well prevent the human brain from evolving into an ever more powerful thinking machine”. [27] Our biological evolution may be at an impasse.*

Biological evolution at its end

We are facing two kinds of evolution: one biological, the other cultural. Living species will continue to evolve biologically. Just as cells joined to create multi-cellular organisms, some organisms of the same species will cooperate like a unique living organism. Ants, wasps, and bumblebees have started this kind of biological



evolution. Growth rates and rates of reproduction of whole colonies when considered as superorganisms were nearly indistinguishable from those of individual organisms. [28] In other cases, more complex symbiosis among species will appear, and maybe a new kind of superorganism will arise.

Nevertheless, I presume, *biological evolution may be at its upper limit.* Social insects have started their cooperation in the dinosaurs era without developing something clamorous yet. Rigid symbiosis may be a disadvantage rather than an advantage. Ecosystems do not have some traits a living organism must have. Finally, cultural evolution has arrived, and it is running faster and faster.

Human beings relate to each other in an even more rapid rate, and are going to enfranchise themselves from the biological evolutionary mechanisms. Cultural evolution is going to spread everywhere. Crops and livestock are not selected by nature. Genetically modified organisms have nothing to do with biological evolution. The choice to kill or to nourish an embryo to have a child free of genetic illnesses is a cultural fact. All clues are going the same direction. As biological evolution replaced chemical evolution now, I assume, *cultural evolution is going to replace natural evolution.*

Cultural era

Biological evolution and cultural evolution are very different. In *The Origin and Evolution of Cultures* Boyd and Richerson underline an important fact: “Culture makes human evolution very different from the evolution of other organisms”. [29] The core of their research states that in cultural evolution *maladaptions may spread and accumulate.*

While in biological evolution the adaptive traits (those traits able to favor the adaptability of the owner) pass to offspring, and non-adaptive traits tends to be rejected, in cultural evolution maladaptions flourish. “To get the benefits of social learning, humans have to be credulous, for the most part accepting the ways that they observe in their society as sensible and proper, but such credulity opens human minds to the spread of maladaptive beliefs. [...] Empirical evidence for the predicted maladaptions is not hard to find.” [30]

As a result: *biological evolution is mechanical, cultural evolution is a matter of choices.*

Human being culture has made a huge leap forward in the last few decades. Till the second half of the last century a good artisan could build an object starting from raw materials. Now this ability is lost. *We cannot build on our own the objects we use.* Mobiles are a typical example. They are the result of interconnections among a quantity of knowledge, technologies, and abilities. They are made by hardware and software and need a web of structures to work properly. Our interconnections and relations are in continuous development. The Internet, social networks, and new software to share information are going to replace radio and television. The latter two are unidirectional, from the center to the periphery. The others are bi- and multi-directional. They increasingly interrelate our minds day by day. However, sharing information may be both an enrichment and a loss, for *information doesn't mean knowledge.* Bad information could spread maladaptions the world over.

Eco-evo-centrism, and conclusion remarks

I believe that we are at a point of our evolution when we have to think in an *eco-evo-centric* way. As if to say, we have to take into account that we are biologically similar to other living beings, but we behave differently in comparison with other biological entities.

Looking back, natural history teaches us that a quantity

of new properties emerged naturally from relations among entities. Life, culture, and consciousness are the greatest. If we look now, we find a cultural evolution that is going to overcome the biological evolution. Nevertheless, cultural evolution is not mechanical. It requires choices. Moreover, the future will reflect the choices we are doing now. In other terms, the future is in our hand.

Eco-evo-centrism does not have any political position. I just argue that human being is not a plague and, in this respect, it is essential to preserve cultural diversity. [31] Human being may be a resource of nature, a new way to evolve. We are, still now, a transitional organism. On the one hand, we are like animals that feel to grab any material things; on the other hand, we are conscious living organisms that may be striving beyond the material. We have to manage this transition by making wise choices.

Wise choices require freedom of thinking, knowledge, determination, ability. Wise choices are those that prospect a respectable material life for all organisms (human being included) and a flourishing life for them other than material life. In a few words, wise choices pertain to the quality of life.

As aware organisms, I assert we have the responsibility of making choices for something bigger, greater than our little reality. To reach this goal we have to invest in all fields of human activity, especially education. The higher education now, the better the world in the future. ●

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