
ECOLOGICAL ETHICS: THE ROAD OF RESPONSIBILITY TOWARDS GLOBAL BIOETHICS

Juan Alberto Lecaros

Abstract: The process of globalization that has taken place since the second half of the 20th century has allowed human beings to reach the ends of the Earth and to explore the planet in its most radical finitude. Experience has revealed the enormous environmental disasters, increasingly frequent, suffered by the planet and the humanity, as well as the grotesque inequalities between societies and the great harm to biosphere and other living beings that we are causing. The individualist ethics that has prevailed until today has been, obviously, conditioned by the dynamics imposed by forms of production and distribution of natural resources: the economy. This paper reviews the evolution of thought in ethical discipline during recent decades. It presents new paths of ethics emergence such as bioethics, converging with approaches to ecology; namely, eco-ethics.

Keywords: *bioethics, eco-ethics, global crisis, proximity, reciprocity, anthropocentrism, biocentrism, ecocentrism, social ecology, principle of responsibility.*

INTRODUCTION: TOWARDS A CONVERGENCE OF ECOLOGICAL ETHICS AND GLOBAL BIOETHICS

The second half of the 20th century has witnessed increasingly evident negative effects generated by the technological and industrial society, on a local and global scale. The terror of annihilation of mankind by a hypothetical nuclear war, the horrific medical experiments during the Nazi regime, the accelerated deterioration of rivers, sea and land by industrial pollution, intensive farming and the increasing gap of inequalities between developed and developing countries, due to the globalization of the economy, among other consequences, led to the emergence of social movements. The public debate on these issues has involved actors from many different disciplines, such as biologists, ecologists, doctors, economists, lawyers, sociologists and philosophers. In this social and political context, at the end of the sixties and early seventies, applied ethics proliferated in academic milieus. Bioethics and environmental ethics recognized a common historical origin but later diverged because of academic specialization. At that time, the increasing socio-ecological global crisis was calling to build up a disciplinary convergence towards a global bioethics, or eco-bio-ethics, that would comprehend and cultivate the interdependence among individual ethics, social ethics and ecological ethics.

Ethics is an activity of public deliberation about the good life in the political community. Nowadays, ideas on ethics, life itself and life in community need to be revised, since civilization is dominated by a socio-economic globalization without any ethical-political control, deeply hurtful to nature and socially unequal. Max Weber stated the idea, later on postulated by Hans Jonas and by Karl-Otto Apel, that an individual ethical conscience is not enough. Indeed, an ethical responsibility towards the future is imperative: a macro-ethics for the planet, which must consider the long-term effects of our collective action.

The word “ethics” comes from the greek word “*êthos*” which originally meant “abode” and “homeland”. Then it took the sense of “how to behave” with oneself and others, i.e. habits or customs. The word “*oikos*” also meant management of the family and home property: prefix from which the words “economy” and “ecology” are derived. The word “*nomos*” meant practice of rule. Faced with the dominant culture of global capitalism, where the economy, that is to say the rules of production and distribution of resources (*oikos* and *nomos*), are placed before the logic (*logikós*) with which works our planetary home (*oikos*) harbour-

ing human and nonhuman life (*bios*), ethics nowadays is to be guided by its original sense. As a defining practice of humanity, ethics means to deliberate on how to behave appropriately with oneself and the *other*. It is in this sense that the ethics of *bios* (bioethics) and the ethics of *oikos* (ecoethics) converge.

HISTORICAL ORIGINS OF ENVIRONMENTAL ETHICS

Most scholars of environmental ethics make references to one of the seminal texts on the ethics of nature, *Sand County Almanac*, contained in a book entitled *Land Ethic*, published in 1949 by the North American forest engineer Aldo Leopold (1887-1948). In the conclusions of this book, Leopold starts from the premise that ethics, in the course of history, has expanded the boundaries of the moral community to eventually include every human being as an end in itself: a human with an intrinsic value. But until now modern society has held the belief that Earth is a commodity or an object with an exclusively economic value, or an extrinsic value. Leopold argues that we are overlooking a substantial, ecological and social fact: that human beings are also members (and co-dependent) of a wider community than the exclusively human one: the biotic community¹ (Leopold, 1949).

It was V. R. Potter who coined the neologism² *bioethics*. Being one of the founders of the discipline, he considered Leopold as a pioneer who “anticipated the extension of ethics to bioethics” in the dedication of his major book: *Bioethics. Bridge to the Future* (1971) (Potter, 1971). Some time later, Potter began to use the term “Global Bioethics” to

¹ A “biotic community” – concept created by the ecologist Karl Möbius in the second half of the XIXth century – is a balanced partnership of organisms of different species, both animal and vegetation, which live and breed in certain conditions of a medium or biotope. (See Deléage, JP [1993]. *Historia de la ecología*. Barcelona, Icaria: 82-86).

² In recent years, it has been acknowledged that the original author of this expression was the Protestant theologian Fritz Jahr (1895-1953), who published in the journal *Kosmos* in 1927 an article entitled “Bio-ethics: an analysis of ethical relations humans with animals and plants”, in which he proposed the Universal Bioethical Imperative, which asserts: “Respect for every living being as an end in itself and to treat it, if possible, as an equal” (See Sass, H M. “Fritz Jahr’s 1927 Concept of Bioethics”, in *Kennedy Institute of Ethics Journal*, Vol 17, No. 4, Dec., 2007, pp. 279-295).

express an ethics that incorporates biological and objective knowledge for the survival of the human species, which is compatible, on one hand, with the symbiotic relationships of a diversity of species and, on the other, with the various ethnic populations that live and coexist in conditions of dignity, equality and health, within the context of civil societies (Potter, 2001).

The ideas of the French-German physician, philosopher and protestant theologian, Albert Schweitzer (1875-1965), were another source of inspiration for environmental ethics. He formulated an ethical mysticism based on “the reverence for life”, founded as he said “in the most immediate, sensitive and comprehensive fact that ‘I’m living and want to live in the midst of living beings who want to live’” (Schweitzer, 1923).

The ecologist and anti-nuclear activist, Barry Commoner, in his book *The Closing Circle. Nature, Man and Technology* (1971), argued that the origin of the planetary ecological crisis was due to failure to adjust between the biosphere and the human techno-sphere. “We have broken out of the circle of life, converting its endless cycles into man-made, linear events: oil is taken from the ground, distilled into fuel, burned in an engine, converted thereby into noxious fumes, which are emitted into the air. At the end of the line is smog. Other man-made breaks in the ecosystem’s cycles spew out toxic chemicals, sewage, heaps of rubbish-testimony to our power to tear the ecological fabric that has, for millions of years, sustained the planet’s life” (Commoner, 1971: 5).

In the seventies the international debate on the environmental crisis begins. In 1972, the United Nations hold the Stockholm Conference on Human Environment. Declarations addressed issues such as intergenerational justice, population growth, and stressed the necessity for national and international cooperation, presenting the situation of developing countries in relation to the environment. In the same year the Club of Rome Report, *Limits to Growth*, was also published. Written by experts of the MIT (Meadows et al.), it opened the discussion about sustainable development (Meadows et al., 1972). The report raised the argument that the exponential growth of world population, food production, industrialization, pollution, as well as the use of non-renewable resources is not sustainable on a finite planet whose natural resources have a limited capacity of absorbing contamination and whose self-regulation of the biosphere cycles is restricted.

THE SOCIO-ECOLOGICAL GLOBAL CRISIS

The world population grew four times during the 20th century, from a figure of 1.6 billion to 6.1 billions people, while the production increased 17 times. Since the middle of the 20th century to the present day, more than a fifth of tropical forests have been lost, with tens of thousands of plant and animal species; the desertification has increased and the acidification of forests and lakes; the greenhouse effect in the atmosphere has also increased dramatically, and the ozone is substantially reduced, among other ecological disasters (Duarte, 2009).

According to *Living Planet* (2008), humanity consumes 30% more resources than nature produces annually, exceeding the Earth's biocapacity,³ although only the 20% of the population (rich countries) consumes 80% of the resources (WWF, 2008).

The ecological footprint index, which measures human's demand on the Earth's ecosystems and its environmental impact, is a further evidence of these inequities.⁴ Between 1960 and 2000 the global ecological footprint grew by 80%, exceeding the Earth biocapacity limit by approximately 20%: in fact, the limit had already been crossed in 1980. The ecological footprint per capita available on Earth is 1.7 hectares, yet we have reached 2.3 hectares. Countries of high income reach a footprint of 6.54 per capita on average (9.6 hectares in the United States). The upper middle income countries and the lower middle income countries have an ecological footprint per capita that has come to 2.66 and 1.73 hectares respectively (in China, 2.1 hectares). Finally, the lower income countries do not even reach the 0.91 hectares per capita: in India, it is 0.8 (*Wackernagel & Rees, 1996*). These figures show that, in terms of resources and environmental services, rich countries of the north live off the ecological space of the South's poor countries.

³ Biocapacity refers to the ability of a biological specific productive area to generate a regular supply of renewable resources and absorb the waste resulting from its consumption.

⁴ "The ecological footprint is a measurement that compares rates of human resource consumption and waste generation with the biosphere's rates of resource regeneration and waste assimilation, expressed in terms of the necessary area to maintain these flows. Ecological footprints represent the biologically productive space required to produce the resources and absorb the wastes of a given population, organization, or product using prevailing management and technology" (*Wackernagel & Rees, 1996*).

In addition to the unequal distribution of resources, the ecological damage is also due to predacious economic abusers, like the U.S., Europe and Japan, where the global ecological exchange is unbalanced. Global warming affects everyone, but not all contribute equally to its generation. The extractive first world economies utilize large amount of commodities, most of which are located in the Southern Hemisphere, leaving these territories not only environmentally damaged and uncompensated, but with their social tissue deteriorated by underpaid labour and public health. The abuses of those economies in regard to ecological trading of goods and services are also unequal, since resources non-or not easily renewable (for example, mineral or forestry resources) are exchanged for highly manufactured products or services that can be produced quickly and without large environmental costs (Martínez Alier, 1998).

However, most countries which benefit from this global economical unstoppable growth are not safe from its harmful effects. This is evidenced by the corrected GDP indexes, which measure the quality of life. They indicate that beyond a certain threshold, the growth does not contribute to economic wealth nor to human welfare, turning out to be counter-productive (Ekins, P & Max-Neef, M (ed.), 1992). At the end of the eighties, the ecological economist H. Daly proposed the Index of Sustainable Economic Welfare and showed that in the U.S.A, between 1950 and 1976, it had grown by 43%, had decreased by 12% in 1988 and then started increasing again (Daly & Cobb Jr., 1989).

It goes without saying that not enough is done to make technological adjustments, increasing legal regulations or promoting environmental education to overcome the global socio-ecological crisis. Aiming towards a reform of the social, cultural and moral development of our societies should be a priority, along with promoting a better redistribution of resources - less consumption, less hoarding- and better support for sufficiency.

THEORIES OF THE VALUE

ISSUES WITH FUTURE GENERATIONS AND MORAL PATIENTS

Ethics is an exclusive practice of man: it is not an affair of nature, since nature doesn't ponder. If human beings have the ability to be rational moral agents who evaluate circumstances, make decisions and assume

their obligations and responsibilities, does a moral community consist exclusively of the reciprocal interrelationships among moral agents? Not necessarily. Let's note that some humans will never be able to reach the ethical capacity of deliberating (those with severe mental handicaps) and others will lose it during the course of their life (elderly dementia and people in vegetative conditions), while, if everything goes well, children will eventually come to exert this ability. Nevertheless, they should be considered morally relevant, with the same rights as healthy adults, only not in the condition of moral agents, but rather as moral patients. A moral patient is understood as a human being beneficiary of the moral agent's conduct, yet unable to demand rights or assume obligations. In fact, moral patients generate obligations of respect and care by the agent because of their vulnerability. From an ethical point of view, this leads to asymmetrical, and therefore non-reciprocal, relationships.

Similarly, if we think that capabilities, vulnerabilities and needs of future generations will not be different from ours, then they should be affected by our present acts. It seems unreasonable to treat them differently, morally speaking, because their birth has not yet occurred. Consequently, future generations should also be considered moral patients.

Thus, two issues emerge: (i) the issue of *proximity*, that sets up considerations towards people distant in time (future generations) or towards people distant in space, and (ii) reciprocity between moral agents and moral patients that involves the scope and valuation of non-reciprocal duties that the former have towards the latter. Thus, proximity and reciprocity are key concepts to designing a global ethics that considers the value of justice towards moral patients.

ANTHROPOCENTRISM IN ENVIRONMENTAL ETHICS

Beyond the moral concern for all human beings, present and future, could there be non-human beings who may also deserve to be included in our moral community because their vital interests are an end in itself? The Kantian ethical anthropocentrism denies that possibility, arguing that only humans deserve respect because they are the only beings with dignity or intrinsic value. Another ethical anthropocentrism, more pragmatic, argues that it makes no sense to assign intrinsic values to nature, which would require dubious metaphysical proofs, when the substantial aim is to articulate practical methods of caring for nature (B. Norton, A.

Weston, A. Light & E. Katz, A. de Shalit). This perspective, called prudential anthropocentrism or weak anthropocentrism (in contradiction with a strong anthropocentric tradition of understanding nature as a mere economic mean to satisfy our purposes), is an environmental ethics centered on human beings but without implying abuse or exploitation of nature. It insists on the fact that nature's value is extrinsic, that it should be minded for its instrumental values (e.g. scientific or bio-genetic resource) or for recreational means, whereas truly respecting nature should mean to be aware of and to glorify its intrinsic values, such as its aesthetic or spiritual values.

To summarize, the premises on which the ethical anthropocentrism rests are: (i) ontological: the Kantian's postulates according to which the ontological abyss between humans and the rest of the living world is unbridgeable, and (ii) epistemic: the Kantians, like the pragmatists, operate with a constructivist epistemology, such as they may be against substantial and objective values in nature, considering that humans are the only measure of value in the world; therefore, they argue that non-human life is not good by itself.

The humanist ethical anthropocentrism approach (see Passmore, 1974 and Ferry, 1994) argues against the need for a new ecological ethic. Bearing in mind that the *Deep Ecology* of A. Naess makes a very hasty review of the tradition of our so-called enlightened rationalism, an ecologic mysticism, irrational and dangerous for democratic societies, Passmore suggests that there is no need for a new ethics, but it is necessary to reinterpret our humanistic tradition and redirect its original values (prudence, non-arrogance, non-maleficence, etc.) towards the care of nature. We should, from there on, seek a middle ground between ecological extremism, which aims to preserve unspoiled nature, and a predatory technocracy of natural resources, useful to man (Passmore, 1974).

Biocentrism in ecological ethics

Thousands of species have been disappearing at an inappropriately rapid rate, from anthropogenic causes. The *non-anthropocentric ethics* which comprises biocentrism and ecocentrism, counter-argue that the fostering of the planet's biodiversity and ecosystems is only sometimes a duty consistent with values centered on human interests. Therefore, defending intrinsic values makes sense. However, the big flaw of the non-anthropocentric posture lies in how to prioritize the intrinsic value

of the entities belonging to the moral community, in cases of conflicts of interest.

For Peter Singer (*Animal Liberation*, 1975), what matters morally is the experience of pleasure or pain of all those affected by an act, and not just the sentient animal, individually considered. Consequently, there would be no difference between killing a human being or an animal. However, Singer eventually changed his statement towards making distinctions between conscious beings: nonhuman sentient beings and self-aware beings. Under this new approach, to kill a being who has a preference for a long life is worse than killing a being unaware of this preference, if there should be any conflict of interest (Singer, 1979).

To this thesis, in line with the proposals of the *restricted biocentrism*,⁵ Tom Regan objected, arguing on a Kantian deontological basis, in defense of the rights of animals. Regan considered that in this case some beings would be only ends in themselves –for example, humans (Regan, 1983). The most discussed issues were the “animal rights” and the uncertain respect as to which of the nonhuman animals are “subjects-of-a-life”.

Also in this deontological train of thought, one of the first philosophers to raise the issue of “animal rights”, J. Feinberg (1974), went a step further and set a wider moral criterion: “conative life”, meaning that life has conscious wishes, desires, and hopes; urges and impulses; unconscious drives, aims and goals; latent tendencies, directions of growth, and natural fulfillments (Feinberg, 1974). For this reason some argue that not only animals should be included within the moral community. In this line of *biocentrism*, P. Taylor (1981) advocated respect for all forms of life, assuming a modality of *biocentric egalitarianism* and postulating the assignment of rights to all beings based on deontology (Taylor, 1981).

That is why some biocentrists such as R. Attfield focused on developing a hierarchical theory of value that estimates, on one hand, the *moral consideration*, in that the living being, though he may not necessarily be the bearer of its rights, should be a concern of the moral agent’s because of its intrinsic value; and, on the other hand, the *moral significance*, that is the priority or hierarchy granted to living beings when, during conflicts of interest, moral judgments emerge (Attfield, 1995). The basic needs of

⁵ *Restricted Biocentrism* includes all the theories that give moral consideration only to some living things. In the beginning, Singer and others considered all sentient animals morally.

the contemporary and future human beings are above the needs of other beings, in the case of a conflict of interest.

The philosophy of life and ethics of responsibility developed by the philosopher Hans Jonas largely shares Attfield's postulates on environmentalist philosophy (Jonas, 1966). The value of human freedom is the result of the evolution of life and it becomes an ontological responsibility to care for oneself and for the world.

Ecocentrism or holism in environmental ethics

The most radical turning point in environmental ethics took place with *ecocentrism*, or *holism*. These approaches point out that it is impossible to build an environmental ethics without a foundation in systems considered integrally: biotic communities, ecosystems and the biosphere in their quality of holders of existing individual entities and species. One of the most extreme positions was defended by J. B. Callicott, who, by holding a radical approach of Leopold's *Land Ethic* and following the ideas of the ethical emotivism of David Hume and Adam Smith, proposed a critique of conventional philosophy. He premised new ethics and new metaphysical paradigms that criticized the thesis of *animal welfarism*, including the movement for animal liberation of Singer, and Regan's animal rights movement, considering them as an extension of traditional ethics and not as a plausible alternative to ecological ethics. According to Callicott, a real "environmental ethics bases the ultimate value in the biotic community and assigns different values to beings [...] and inanimate entities such as oceans, lakes, mountains [...] which have more value than individual animals" (Callicott, 1989).

From the beginning, however, the thesis of another pioneer, H. Rolston III, postulated a convergence between holism and individualism with a hierarchical theory of value. His approach placed human beings at the pinnacle of the scale of intrinsic values, for their ability to recognize values, thus bearing the responsibility of caring for the Earth. The holistic dimension of Rolston's thesis posits that the appropriate level of assessed interest in life exists within all species, each carrying the genetics of its species and therefore suitable for the survival of the individual (Rolston, 1988).

One of the most popular interpretations of holism is the *Deep Ecology*, founded by the philosopher A. Naess, that proclaimed an ecological worldview and a movement of conscious transformation he called

“ecosophy”. His ideas were first proposed in an article, published in 1973, which made the distinction between the “superficial ecology movement” and the “deep ecology movement” (Naess, 1973).

SOCIAL ECOLOGY

Social ecology admits several approaches: social libertarian ecology, environmental justice movement, environmentalism of the poor and ecofeminism. They have in common to be outside the discussion of anthropocentrism or non-anthropocentrism, because they encompass ethical and socio-political topics. They are positioned beyond the distinction between superficial ecology movements (environmentalists) and deep ecology (radical environmentalism). In general terms, the thesis defends that ecological problems are rooted in social problems and these can be critically analyzed through the natural and human ecology.

Murray Bookchin advocates for a political ecology based on an ecological science discourse combined with anarchist ideas. He began by leading a frontal attack against *Deep Ecology*, objecting that individual transformation and the conservation of nature would be the right way to overcome the problematic. He then proposed a socio-political transformation to achieve a more dignified life and a non-exploitative relationship with nature. According to Bookchin, the ecological crisis is a consequence of the forms of domination between people in highly hierarchical societies. He believes the restructuring of social dominations to be primordial if the problem of nature’s exploitation is ever to be solved. To do so, he proposes the alternative of creating small self-sufficient eco-communities: bioregionalism (Bookchin, 1982).

Also, Indian activist R. Guha undertook a strong critique towards *Deep Ecology* in the eighties. In poor countries, says Guha, the ecological problem does not depend on a radical conservation of nature, but on resolving social conflicts between the “people of ecosystems” –that survive on their local resources and pollute very little– and powerful corporations, consumers of natural resources in large areas and responsible for strong and damaging environmental impacts (Guha, 1995).

The ecological economist J. Martínez Alier has further elaborated this approach and called it “Ecology of the Poor”. This environmentalism is born of environmental conflicts (local or global) caused by private or state appropriation of communal natural resources, thus affecting the emaci-

ated and most disempowered populations. The focus, according to Martínez Alier, is on establishing a link between political ecology, defined as the study of ecological distributive conflicts, and the environmental economy, defined as the study of classical economics ecological unsustainability (Martínez Alier, 2004).

CONCLUSIONS: THE PRINCIPLE OF RESPONSIBILITY AS CARING FOR VULNERABLE BEINGS

After reviewing the various theories surrounding environmental ethics the impression that none of them is sufficient to address the ecological crisis remains: first, due to the crisis between the social system as a whole and the biosphere's system, and, secondly, given the internal crisis of global society caused by socio-ecological inequities.

To offset these theoretical slants a brief outline for a theory of multiple approaches in environmental ethics is proposed, consisting of: 1) A Framework Principle: the principle of responsibility and care for vulnerable beings, 2) the derivational principles, 3) the strategic principles and practical principles which ensure the derivational principles, and, 4) The ecological citizenship for a sustainable society.

We assume that *the principle of responsibility in caring for vulnerable beings*, a concept borrowed from H. Jonas, is a good framework to start with, because despite its breadth it allows the perspective of an ethics that worries about fostering vulnerable contemporary and future human beings, as well as the care for other beings, namely, environmental ethics. It is a principle that is guided by an anthropological finitude and the idea of the fragility of life, defined by Jonas as "the *care for*, recognized as a duty towards other beings, given the threat of its vulnerability, becoming its 'concern'" [28]. The responsibility for the care of other beings is characterized by its non-reciprocity, since it is held toward beings with no rights because they don't exist (future beings) or because they don't have the ability to exert those rights (i.e. the non human living beings).

Principles derived from the Framework Principle are: the principle of global economic and ecological justice, the principle of justice towards future generations and the principle of life care in the biosphere [29].

The strategic principles and practical application through policies agreed between countries at different stages of development are conceived as

intermediate principles aimed at preserving the integrity of derivational principles. These principles are: sustainability, precaution, solidarity and common but differentiated responsibility.

The current political theories are aware that sustainable societies, whether operating with technological adjustment policies (environmentalism) or strong sustainable development policies (green policy) are increasingly supported by citizens committed to environmental issues. The category of “ecological citizenship” is emerging as a new standard in citizenship theory (Dobson, 2003).

The theory of ecological citizenship is a key element for a sustainable society, raising again the question we stated at the beginning of this article: the necessity of reflecting on the convergence between the eco-ethics of our home planet and the bioethics of life.

BIBLIOGRAPHY

- Attfield, R., (1995). *A Theory of Value and Obligation*. London: Routledge.
- Bookchin, M., (1982). *The Ecology of Freedom*. Palo Alto: Cheshire Book.
- Callicott, J. B., (1989). *In Defense of the Land Ethic*. New York: SUNY Press.
- Commoner, B., (1971). *The Closing Circle: Nature, Man, and Technology*. New York: Knopf.
- Daly, H. & Cobb, J., (1989). *For the Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future*. Boston: Beacon Press.
- Dobson, A., (2003). *Citizenship and Environment*. Oxford: Oxford University Press.
- Duarte, C. (coord.), (2009). *Cambio global. Impacto de la actividad humana sobre el sistema Tierra*. Madrid: Libros La Catarata / CSIC.
- Ekins, P. & Max-Neef, M. (ed.), (1992). *Real-Life Economics. Understanding Wealth Creation*. London: Routledge.
- Feinberg, J., (1974). “The Rights of Animals and Unborn Generations” in Blackstone W., (ed.). *Philosophy and Environmental Crisis*. Athens: University of Georgia Press; pp. 43-68.
- Ferry, L., (1994). *El nuevo orden ecológico. El árbol, el animal y el hombre*. Barcelona: Tusquets.

- Goodpaster K., (1978). "On Being Morally Considerable" in *Journal of Philosophy*, 75(6); 1978, pp. 308-325.
- Guha R., (1995), "El ecologismo de los pobres" in *Ecología Política*, 1995, N° 8; pp. 137-152.
- Jonas, H., (1966). *The Phenomenon of Life. Toward of a Philosophical Biology*. New York: Harper & Row.
- Jonas, H., (1984). *The Imperative of Responsibility. In Search of an Ethics for the Technological Age*. Chicago: The Chicago University Press.
- Leopold, A., (1949). *A Sand County Almanac and Sketches Here and There*. Oxford: Oxford University Press.
- Martínez Alier, J., (1998). *La economía ecológica como ecología humana*. Madrid: Fundación César Manrique.
- Martínez Alier, J., (2004). *El ecologismo de los pobres. Conflictos ambientales y lenguajes de valoración*. Barcelona: Icaria.
- Meadows, D. et al., (1972). *The Limits to Growth: a Report for The Club of Rome's Project on the Predicament of Mankind*. New York: Universe Books. See too Meadows, D. et al., (1992). *Beyond the Limits: Global Collapse or a Sustainable Future*. London: Earthscan Publications.
- Naess, A., (1973). "The Shallow and the Deep, Long-Range Ecology Movement" in *Inquiry*, 1973, Issue: 16, pp: 95-100.
- Naess, A., (1989). *Ecology, community and lifestyle. Outline of an Ecosophy*. Cambridge: Cambridge University Press.
- Passmore, J., (1974). *Man's Responsibility for Nature: Ecological Problems and Western Tradition*. New York: Charles Scribner's Son.
- Potter, V.R., (1971). *Bioethics. Bridge to the Future*. New Jersey: Prentice-Hall, 1971.
- Potter, V.R., (2001). "Moving the Culture toward More Vivid Utopias with Survival as the Goal" in *International Society of Bioethics SIBI*, Vol. 14, N° 4, January-June, 2001, pp. 71-86. See too Potter, V.R., (1988). *Global Bioethics: Building on the Leopold Legacy*. East Lansing: Michigan State University Press.
- Regan, T., (1983). *The Case for Animal Rights*. Berkeley: University of California Press.
- Rolston III, H., (1988). *Environmental Ethics. Duties and Values in The Natural World*. Philadelphia: Temple University Press.
- Schweitzer, A., (1923). *Kulturphilosophie*. München: Beck.
- Singer, P., (1979). *Practical Ethics*. Cambridge: Cambridge University Press.

- Taylor, P.W., (1986). *Respect for Nature. A Theory of Environmental Ethics*. New Jersey: Princeton University Press.
- Valencia Sáiz A., Arias Maldonado M., y Vásquez García R., (2010). *Ciudadanía y conciencia medio ambiental en España*. Colección “Opinión y actitudes” 67. Madrid: CIS.
- Wackernagel, M. & Rees, W., (1996). *Our Ecological Footprint. Reducing Human Impact on the Earth*. Gabriola Island: New Society Publishers.
- WWF International (2008). *Living Planet Report*.

Juan Alberto Lecaros
Universidad del Desarrollo – (Chile)
albertolecaros@yahoo.it

This paper was received on December 15, 2012 and was approved on January 20, 2013.