

Chapter 11

Epilogue: The Epistemic and Practical Circle in an Evolutionary, Ecologically Sustainable Society

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Abstract In a context of human demographic, technological and economic pressure on natural systems, we face some demanding challenges. We must decide 1) whether to “preserve” nature for its own sake or to “conserve” nature because nature is essentially a reservoir of goods that are functional to humanity’s wellbeing; 2) to choose ways of life that respect the biodiversity and evolutionary potential of the planet; and, to allow all this to come to fruition, 3) to clearly define the role of scientific expertise in a democratic society, recognizing the importance of biospheric equilibrium.

In fact, in socio-scientific controversies, which are characterized by complex linkages between some life and environmental sciences objects and economic, political and ethical issues, a posture of transparent, impartial commitment is appearing, more and more, as a deontological necessity.

The earth is fast becoming an unfit home for its noblest inhabitant, and another era of equal human crime and human improvidence . . . would reduce it to such a condition of impoverished productiveness, of shattered surface, of climatic excess, as to threaten the depravation, barbarism, and perhaps even extinction of the species.

George Perkins Marsh – 1864

Can human activity really be significant enough to drive the Earth into a new geological epoch? . . . The ultimate drivers of the Anthropocene, . . . if they continue unabated through this century, may well threaten the viability of contemporary civilization and perhaps even the future existence of Homo sapiens.

Will Steffen, Jacques Grinevald, Paul Crutzen, and John McNeill – 2011

There is a grave danger facing mankind. The danger is not from acid rain, global warming, smog, or the logging of rain forests, as environmentalists would have us believe. The danger to mankind is from environmentalism.

Michael S. Berliner – Ayn Rand Institute 2012

Man has become one of the major factors in evolution on the planet. In this new context, evolutionary, ecological and ethical issues have become some of the more pressing concerns facing humanity. Natural systems are facing steadily increasing human demographic pressure and eco-unfriendly technological and economic activities that risk pushing them beyond their equilibrium and resilience capacities. At the same time, social systems are experiencing a new phase in development. Geographical borders no longer place limits on the communication and globalization of specific cultural and socio-economic patterns. In light of the profound ecological and sociological changes that are rapidly transforming our natural and social environments, humanity has a broad range of choices about what kind of society could be achieved. At the extremes of this spectrum lie various social models that involve very specific man-nature relationships. There is a social model based on the “survival of the fittest,” where the struggle for existence between the members of a society, and with the members of other societies, continues to sustain a predatory relationship with the rest of nature. At the other extreme is a more cooperative kind of society, where an enlarged common good is pursued – a common good that is not limited simply to certain short-term specific human interests, that clearly recognizes the right of other non-human species to an existence and that values the persistence of the environments that allow these species to survive and proliferate.

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Some of the challenges that our societies must face in the coming years are more pressing than others. First, in the context of the continuous decline in the planet's biodiversity, we must decide whether to structure our societies around management policies and patterns that ensure the preservation of nature, or its conservation. Second, among the various options for social and economic development, we need to choose a model that is consistent with respect for the greatest evolutionary potential of our planet. Third, we must clearly define the role of scientific expertise in a democratic society that recognizes as one of its objectives the maintenance of a biospheric equilibrium favorable to biodiversity.

The choice of the environmental trajectory of our societies is no trivial matter: it will have direct consequences on our ecosystem management strategies. The traditional opposition between preservationism and conservationism, emblematically represented by the tensions and even clashes between the ideals of John Muir and those of Gifford Pinchot (Bergandi and Blandin 2012), implies very different types of societies, and consequently very different man-nature relationships. The epistemic and practical center of gravity of preservationism is nature and its equilibrium, and more particularly, the wilderness, a state of nature where evolutionary processes can come into existence without encountering any major hindrances from human activity. A society structured around a preservationist worldview will limit the impact of man on natural systems to a minimum. Such a society will recognize the ontological integration of humanity in nature and will ensure that technological and economic development is congruent with nature's dynamics. In other words, from the beginning, technology and the economy would be thought of as constituent parts of the environment, meaning that one primary objective of the way they are developed would be their coherent adaptation within natural systems.

The barycentre of conservationism is human society and its economic order, which, in the best scenarios, will make "wise use" of natural resources. From this perspective, nature is synonymous with natural resources: nature is nothing but a reservoir of goods and potentialities for developing our economies. Man is at the center of the ecosystems, and everything is thought and lived in function of human interests and expectations. Biodiversity is conserved because its decline can be harmful to the well-being of humanity and not because destroying other species, and environments, and disrupting biospheric equilibriums to increase human consumption is ethically reprehensible in itself. Such a conservationist perspective on the man-nature relationship underlies the sustainable development paradigm, which tends to be assumed as a guiding principle by governments, international institutions, corporate business, civil stakeholders and the public. Its widespread acceptance undoubtedly results in part from the vagueness and flexibility of its semantic core, which allows different stakeholders to see in this developmental model whatever they want to see in terms of their specific interests and purposes. In reality, the sustainable development paradigm has not yet won the competition for the governance of the planet. It is only one of the models that holds the stage, sharing political space with the economic de-growth movement and various models of environmental ethics.

Formally, sustainable development is a model with a high moral content. From a reading of international treaties, conventions and declarations, the prospective planetary society, grounded on the globalization of sustainable development policies to the totality of human societies, purports to be a truly democratic society where everyone, regardless of their gender, age or social condition, can satisfy their basic needs. It is a social model where awareness of the ontological interdependence between man and nature determines a minimal impact of human activity on ecological systems, entailing profound lifestyle changes and a substantial reorientation of consumption patterns. In such a society, an awareness of the priority of the common good would guide the actions of individuals and economic groups (WCED 1987).

In reality, the sustainable development model is proposing a future world that would be balanced precariously between utopia and Janus-like postures. In fact, its peculiarity consists in sustaining antinomic positions: it simultaneously supports the preservation and the conservation of nature; it recognizes the instrumental and intrinsic value of biodiversity (see Preamble of the Convention on Biological Diversity, CBD and UNEP 2001); and it sustains continued economic growth in a finite world of finite natural resources. Even if this growth is called "sustainable", this takes for granted the possibility of achieving the harmonious coexistence of ecological sustainability and economical sustainability. Moreover, it does all that without fundamentally calling into question the mainstream productivist economic model of development. The utopian side of the model consists in imagining a new international political and economical order grounded on the planetary globalization of democratic governance, which is to be better adapted to guarantee the common good of the populations against private, particular interests and more inclined to respect environmental integrity. Citizen participation in environmental decision-making would represent a barrier against unsustainable uses of the environment. Nevertheless, the ambiguity intrinsic to a utopia, as a good place or as a totally non-existent place, is also intrinsic to the sustainable development model, and this represents, at the same time, its strength and its weakness.

The magnificent, soothed, idealized world represented in international treaties and conventions is in stark contrast to the actual results of implementing sustainable development programs and policies. If the sustainable development model's internal contradictions and the gap between the ideal and the reality are not overcome, then it will long remain in the empyrean of the utopias. It could perhaps endure as a kind of inefficacious religious mantra, or a very efficacious instrument of intoxicating advertisements to promote the idea that everything has changed, whereas, in reality, the development taking place is incompatible with the imaginary world of "sustainability." Ultimately, the sustainable development model's internal contradictions will likely determine its fiasco.

Among the key challenges that we have to face in the current context, clarification is needed about scientists' role in society, their margins of autonomy or their dependence on the rest of society, and the role of internal factors (logical, methodological) and external factors (social) in the determination of controversies in the life and environmental sciences.

In fact, nowadays, as at the beginnings of modern science, scientific knowledge is rarely free of social interests or of practical and cultural repercussions on the life of society. Some controversies sprang out of the meeting between scientific questions and moral, economic and religious worldviews and ways of life. Darwin's scientific proposal about the causes of the variability of species is an historical and emblematic example of the comings and goings between science and society. With Darwin, from the beginning a "no religion's land" has been instantiated. As grounding for the scientific neutrality of his position towards religion, Darwin cautiously extracts one specific aspect of Whewell's natural theology concerning the role of the Laws of Nature. Whewell considered that the universe was the work of an omnipresent Deity, and that the laws of nature were the expression of its power. But Darwin chose as a frontispiece quote for *The Origin* exactly the passage where Whewell clearly indicates that nature is ruled by laws and not directly by specific creation events of the Divine power.

But with regard to the material world, we can at least go so far as this—we can perceive that events are brought about not by insulated interpositions of Divine power, exerted in each particular case, but by the establishment of general laws (Darwin 1859; Whewell 1833, 356).

The existence of a God, legislating or not legislating for nature, is not the object of Darwin's research; such a question is explicitly dismissed as a metaphysical, "insoluble" non-scientific issue (1876, 73): the study of nature and the study of religious beliefs belong to different realms of meanings. The solution chosen by Darwin, i.e. neutral impartiality about a question that is considered metaphysical, and not scientific, is not always an easy path to follow. Our societies are living through major cultural transformations, and new challenges are increasingly emerging from the relationship between science and society. More particularly, some of these challenges concern the life and environmental sciences and the public understanding of scientific knowledge and its applications.

Some controversial scientific topics lying on the border between science and society (e.g. the conservation of biodiversity; the ecological and social impact of certain new bio-technologies; and climate and environmental change issues, among others), involve research dynamics that are inevitably intermingled with the personal philosophical, ethical and political, conscious or unconscious, convictions of the researcher. The answers to socio-scientific questions like these cannot be decided exclusively on the basis of so-called impartial scientific results. These questions belong to an order of meaning that is totally different from questions such as: does the universe have borders? Do neutrinos move faster than the speed of light? In the case of the socio-scientific controversial issues, it is the whole universe of values, of the researcher's moral and political convictions, that is involved, because these issues are not exclusively scientific but also economic, political, ethical and cultural.

With socio-scientific issues, with topics that clearly have economic, ethical and political implications, what is at stake is the epistemic and sociological autonomy of the scientific community. The scientific ideal of a clear dichotomy between scientific facts and values, between science and ethics – historically grounded on positivistic and neo-positivistic perspectives – is still pervasive today, with different degrees of intensity, depending on the scientific community of reference, and this dichotomy still grounds our current scientific rationality. Science, with its descriptive statements, referring to the "facts," produces meaningful sentences which, being empirically testable, are the expression of objective knowledge. Ethics, with its prescriptive statements – non-testable, relative and subjective – does not accord with the ideal of objective knowledge. In fact, from this perspective, the possibility that ethical sentences could be true or false is denied: because they are not factual statements, they are in that regard nonsensical, meaningless. The assumption of a dichotomy between fact and values is no longer considered crystal-clear, or evident at all (Putnam 2002).

The treatment of this dichotomy substantially parallels the treatment of another classical dichotomy, i.e. between theory and observation. The experimental and observational dimensions of science do not exist in a conceptual vacuum. The ideational, theoretical dimension, even in the pre-theoretical form of hypothesis, directly participates in the definition of scientific problems, “legitimate facts” and solutions. Ideas permeate scientific facts; they allow facts to emerge as such. Facts, as Dewey reminds us (1986, 127 [1938]), are not “given” (by our senses or observation methods) but, rather, are “taken” (extracted from the complex, total field of the problematic situation by the ideational contents of the scientific inquiry).

Using a comparable constructivist perspective, a functional, reciprocal correlation between facts and values can be found. Dewey tells us that (epistemic and ethical) values are not fixed, isolated ends-in-themselves, but they are ends-in-view, ends to be attained, reached, plans of action and purposes. They directly participate in the discrimination, or selection, of the means used to carry out scientific inquiry and the selection of data. Values determine the elements to be taken into consideration in the formation and the framing of a problem, and they should be understood, and lived, as hypotheses that must be practically evaluated and socially tested. Finally, more specifically, values can play a role in encouraging and orienting scientific research; they can become guides for observation or guiding principles for scientific work (Dewey 1986, 491 [1938]; see also: Popper 2004, 16 [1935]; Einstein 1993, 28 [1934]).

The reality of research is grounded in an entanglement of facts and values, independently of whether controversial scientific issues are involved. Nevertheless, the original, ontological and epistemological mix of facts and values assumes all its significance in the case of socio-scientific controversies. In fact, when the researchers are confronted with topics about which they are, consciously or unconsciously, committed – from an affective, ethical or political point of view – how can they not reject, dismiss or undervalue, hypotheses, theories, or quite simply “facts” that are not congruent with their own worldviews? Once the idea is accepted that values permeate facts – even if the search for impartial, objective knowledge continues to represent the ultimate aim of any scientific community – it follows that, however much individual researchers strain to achieve complete objectivity, they never succeed. Nevertheless, the entirety of the results of the scientific community, over time, will increasingly approach objective knowledge, without ever totally reaching it at a given time.

At best, the scientist aware of the multiple forms of his commitment relative to the object of research will try to set aside prejudice and critically evaluate the data, theories and values at stake. To avoid any eventual misdirection in the research and in the communication of the results of the research with lay people, one possible posture to be applied could be that of an impartial commitment. In that situation, in the case of the socio-scientific issues, the researcher who keeps in mind, as much as possible, an impassible, ataraxic posture relative to the theories and values situated at the antipodes of his worldview will explicitly set out and clarify his ethical and political preferences. Considering all the complex linkages between some life and environmental science objects and economic, political and ethical issues, a posture based on this kind of transparency is appearing, more and more, to be a deontological necessity. Otherwise, non-neutral scientific results will be presented as the expression of an objective knowledge, masking their true appearance. The ensuing confusion would have decisive repercussions on our political conduct and our choices about what type of planet we want for us, now, and for future generations.

An impartial, enlarged scientific community, involving not only natural scientists, but also philosophers, historians, anthropologists, sociologists, and economists, among others, should commit itself to developing a collective awareness of the consequences of human activity on the planet. A feedback process that can reverse the process of environmental degradation could be activated if, and only if, it is the expression of a refoundation of the value-systems that underpin cultures and societies that today are forging the “biosphere” in an “environment” that reduces non-human nature to a simple extension of the human species. In the future, there is a real possibility that evolutionary biology and ecology will develop their research by no longer using natural systems as the object of study, but agro-ecosystems managed to optimize the production of products functional to the subsistence of the human species. In this case, the Biosphere will be very different from now; it would be closer to an Urbosphere, an artificialized, urbanized planet embellished by some patches of nature here and there. The ethical and political-economic preferences that we are making today will determine the evolutionary and ecological paths of the future of the planet. These choices will directly produce the environments where natural selection processes will operate, selecting, if we make bad decisions, more and more domesticated species.

Our systems of values are selected by the environment through the consequences of our activities on natural systems. Our economic activities are the embodiment of our ethical values, and the repercussions that these activities have on our lives, on other species and on the environment represent, in a figurative way, the

biosphere's refusal or approval of the values underlying these activities. Among the many ethical options which humanity has at the moment is a farsighted co-evolutionary ecological ethics. This option, which pays equal attention to the prosperous evolutionary flourishing of both natural and social systems, is based on a fundamental worldview reversal. To paraphrase the well-known anthropocentric sentence of Baxter (1974; see in this vol., 1st Chap., pp. 6–7), we could say that, what is good for nature, penguins and pine trees is, in many respects, good for humans. Natural equilibriums are the basis of life on this planet, and, even embracing a more restricted, blind, short-term homocentric point of view, their possible breakdown will in no way be functional to the interests of the human species. "Man is Nature becoming conscious of itself," held Elise'e Reclus (1905, I; see also Bergandi 1998, 525–529), one of the forerunners of human geography who clearly recognized that the study of nature is the precursor of action to preserve animal and plant species. A humanity like this, a conscious expression of nature, must definitely decide on its place in the world. We may continue to consider ourselves as the acme of evolution, the master and possessor of nature or, finally, we may recognize ourselves to be a co-evolutionary entity that is strictly integrated with the rest of nature.

If this recognition is accompanied by a cultural, ethical transition involving the endorsement of the sharing, at least in principle, of intrinsic value – traditionally considered as a unique, typical human property – with our other travel companions in the biosphere, the other actors (other species) and scenes (environments) in this evolutionary journey, then humanity will, presumably, increase its chances of saving itself. As humans, to survive and develop our potentialities, we have no solution other than to metabolize environmental energies, but we can, and likely must, minimize our impact on the biosphere's evolutionary and ecological processes. By doing so, by respecting non-human nature for its own sake, grounded on the very fact of its existence as an evolutionary entity, we will, most likely, witness a paradoxical side effect: that we too will continue to form a part of this biosphere for a long time to come.

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