

POLITICAL ECOLOGY IN LATIN AMERICA: THE SOCIAL RE-APPROPRIATION OF NATURE, THE RE-INVENTION OF TERRITORIES AND THE CONSTRUCTION OF AN ENVIRONMENTAL RATIONALITY

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Summary

Political ecology is the disciplinary and the political field of encountering of different rationalities in the social appropriation of nature and for the construction of a sustainable future. This historical objective demands the de-construction of theories and practices built on the foundations of scientific, economic, technological and political rationality, inscribed in national and international institutions and rooted in the “Westernized” life-worlds of the people, to establish new socio-environmental relations. This de-construction is not only operated by political ecology as theory, but above all by emancipation practices of those peoples engaged in struggles for the re-appropriation of nature and the re-invention of their territorialities in the construction of an alternative environmental rationality. Traditional societies and local economies do not only produce and exchange use values; they also generate “meaningful use values” that

reflect the complex relation of the symbolic and the natural order in the socio-economic and political relations of production. Under an environmental rationality, nature is de-linked from the strategies of the dominant economic rationality. Environmental rationality de-constructs economic rationality by constructing an eco-technological-cultural paradigm of production founded on the principle of *negentropic productivity*. The conditions of life of diverse cultures, registered in the imaginaries and practices of the peoples, re-emerge today in the re-signification and re-affirmation of cultural identities in their struggles for the re-appropriation of nature and re-territorialization of their life-worlds.

1. Emergence of the Environmental Crisis: The Political-epistemic Debate

The environmental problems that irrupted in the 1960s represent a *crisis of civilization*: a limit in the progression of modernity and the opening of new civilizatory horizons in the perspective of sustainability. This divergence in the course of history called for the merging of nature and culture that were divided by the ontological and epistemological dualism that founded modernity. The environmental question arose together with other social issues, public debates and emancipation processes: the feminist, gender and students movements; the ethnic-racial question that gained prominence with the de-colonization of Asian and African peoples, as well as the black movement in the USA.

The ecological movement emerged in this context debating the environmental crisis triggered by economic growth and technological progress: from the critique of the arms race to the “society of waste and pollution” brought about by industrialization. New epistemic horizons were opened from the standpoint of the sciences and methods of complexity, post-structuralism and the philosophy of post-modernity. Hermeneutics, de-constructionism and constructivism were associated with the search of new ways of thinking and constructing knowledge that oriented emancipation processes from oppressive social structures and an objectified reality: from patriarchy and gerontocracy, capitalism and socialism, scientism and technology.

From then on, the idea of the limits to human intervention in nature gained force. After the detonation of the atomic bomb in Hiroshima and Nagasaki, science lost its neutral status, questioning its effects on society. Science was not necessarily at the service of life or of human emancipation as pretended by the Enlightenment. The crisis of science did not arise primarily from its internal theoretical inquiries, but from damages derived from its applications. The repercussions in society of scientific rationality implied the critique of its metaphysical-ontological-epistemological foundations, mainly of its hegemonic positivist and structural-functionalist derivations, and by questioning the power strategies embedded in knowledge (Foucault, 1980). This crisis of scientific reason opened ways for other epistemological approaches to emerge as well as other matrixes of rationality, including the emancipation of subjugated knowledge by the epistemological colonialism of Eurocentric thinking that ignored and disqualified other cultural worldviews, other human experiences and practices, other forms of cognition and knowledge.

From Vance Packard's *The Waste Makers* (1960), to Rachel Carson's *Silent Spring* (1962), Paul Erlich's *The Population Bomb* (1968), Nicholas Georgescu-Roegen's *The*

Economic Process and the Entropy Law (1971), the MIT/Club of Rome study on *The Limits to Growth* (Meadows *et al.*, 1972), Hans Magnus Enzensberger's *Critique of political ecology* (1974), and Celso Furtado's *O Mito do Desenvolvimento* ("The Myth of Development") (1974), the environmental debate acquired explicit political dimensions. It is in this intellectual context that the United Nations convened the first World Conference on Human Environment, held in Stockholm, in 1972. Thus, the environmental question entered the international geopolitical agenda.

The environmental crisis came to question the civilizatory project based on the anthropocentric ideal of man's *domination of nature* instituted in the rationality of modernity, where its ethic, epistemic, technical and political dimensions conflate in the centrality of economic rationality in social life (Leff, 2004). The separation between human and natural sciences, beyond the specialization within each one of these fields, corresponds to the separation of peasants and original peoples from nature, banishing communities from their territories. The search for basic essential unities of different ontological orders became an epistemic obsession of modern science: in biology, with the cell or the molecule; in physics with the atom; with the individual in the social sciences. The belief in the scientific world that the mysteries of nature are revealed in mathematical language was to be reflected in the mundane world in the unitary logic of market values. Thus, the hegemonic paradigms of modernity were instituted in the life worlds of individuals.

With the environmental crisis, the inquiry on nature became an epistemological and a political debate on the sustainability of life. Nature was subdued to modern scientific and technological development, particularly after economic rationality was instituted as the reason-of-being-in-the-world and individual behaviors conducted by rational choice. With the capitalist mode of production, modern economy abandoned the Physiocratic principle that affirmed that nature was the source of wealth through the reproduction of seeds. With this oblivion of nature, economic rationality externalized nature and abandoned the inquiry on the ecological conditions for the sustainability of the economic process. The economic process became an increasing process of production mobilized by fossil fuels (carbon and oil) that slowly but irreversibly and in complex ways generated ecological decay and the environmental degradation of the planet.

To be sure, the economy cannot produce nature: energy contained in a molecule of carbon or in the atom, even if put into production by modern economy, was not produced by humans; no country, no society, no people have produced iron, oil or water. However the degradation of matter and energy into soil, water and air pollution are produced by the economic process when treated as "externalities". Thus, the environmental crisis questioned economic rationality: the epistemological conception of ideas (*res cogitans*) outside nature (*res extensa*).

With the environmental crisis, sustainability has emerged as a condition and a goal for global ecological balance and human survival. However, sustainability is a polysemic concept that cannot be universally and unanimously defined. The dispute of meanings and strategies for the social construction of a sustainable future is at the very center of political ecology. Within the diverse approaches to sustainability in environmental and ecological economics, two radically different approaches are distinguished within

political ecology: one being configured under the hegemonic economic rationality; the other based on ecological potentials and cultural identities in the construction of an alternative environmental rationality (Leff, 2004), based on cultural diversity, the re-invention of territories and the social appropriation of nature. Peoples' emancipation strategies for sustainability are thus distinguished from the dominant geopolitics of sustainable development.

2. The Geopolitics of Sustainable Development

Political ecology is the disciplinary and the political field of encountering of different rationalities in the social appropriation of nature and for the construction of a sustainable future. This historical objective demands the de-construction of theories and practices built on the foundations of scientific, economic, technological and political rationality, inscribed in national and international institutions and rooted in the majority of the peoples' life-worlds, to establish new socio-environmental relations. This de-construction is not only operated by political ecology as theory, but above all by emancipation practices of those peoples engaged in struggles for the re-appropriation of nature (Leff, 2004) and the re-invention of their territorialities (Porto-Gonçalves, 2006).

In this sense, political ecology transcends the purpose to ecologize the economy by assigning market values to nature and economic instruments to environmental management (Polanyi, 1980, Martínez Alier, 1996, Leff, 2004, Bartra, 2008). Beyond the debates between "fictitious economy" and "real economy", between "speculative capital" and "productive capital", political ecology re-captures the economy based on the productive processes of nature, its cultural meanings and its territorial inscription. As pointed out by ecological economics, the economy should be understood and treated as a subsystem of a larger finite system, the biosphere, which implies the impossibility of permanent growth. The established economy generates distributive inequalities in economic wealth, ecological potentialities and environmental costs, questioning the belief in the regulative mechanisms of the economy, the power of techno-science and the fallacy of its capacity to de-materialize production:

the difference in emissions of greenhouse gases between individuals, based on their economic wealth and consumption patterns [...] shows that the 500 million richest people of the world (7% of world population) generate half of the greenhouse gases dumped to the atmosphere [...] Even though today one unit of monetary value might be produced with 30% less materials than 30 years ago, there was an increase of 50% in the demand of these materials in the same period. Considering that the average consumption of natural resources by the American people is 88 kilograms per day, and that of the African people of south Sahara is only 10 kilograms daily (Friends of Earth *et al.*, 2009), a generalization of consumption patterns to those of the richest countries would lead to an increase of the pressure over the sustainability of ecosystems and their capacity to offer the basic environmental services. It is a false illusion to think that the reduction of present social inequalities can be compatible with the generalization of the consumption patterns of that 7% of the world population that is responsible for half of the emissions of greenhouse effect gases (Abramovay, 2010).

After the Stockholm Conference in 1972 a worldwide debate on the limits of the present trends of human intervention on nature was launched; ecological movements oriented

the debate on the economic and political interests involved in the social appropriation of nature. Nature was re-signified by the transformations of social and power relations induced by a new cycle of economic growth and technological development through biotechnology, genetic engineering, micro-electronics, informatics, nanotechnology and robotics (Porto-Gonçalves, 2006). Biodiversity and germplasm became sources of capital accumulation for transnational corporations through new strategies for the appropriation of nature, such as ethno-bio-piracy and the attempt to legitimize intellectual property rights over natural processes. The principle of private property was extended not only to plants and animals, but to microscopic cells and the nanoscopic levels of genes. While until then all cultures had established their relations with nature at a macroscopic level of the organism, nanotechnology expands the frontier of capital to the interior of matter and of the living cell. The gene is only observable and modified with instruments of microscopic research. Thus, the locus for the production of knowledge and meaning of nature shifted from the life-worlds and livelihoods of the people to the laboratories of biotechnology as centers of biopower for the expansion of capital (Porto-Gonçalves, 2007). At another level, the increasing emission of greenhouse effect gases resulting from the industrial metabolism mobilized by fossil fuels that has transformed the composition of the atmosphere, generated complex meteorological processes and triggered climate change. Their regulation has entered the financial circuits with the pretension of protecting the environment through the economic coding and valuing of carbon bonds as the basis for negotiations of global warming (Cornetta, 2010).

The scientific controversies on biodiversity and climate change have been trapped in the power strategies of *sustainable development* (Leff, 2002; Porto-Gonçalves, 2006; Bartra, 2008). The environmental question has been captured by the logics of the market and its financial strategies, as well as by normal science, ignoring the power relations that cut across the *geopolitics of biodiversity and sustainable development* that extends, intensifies and complexifies previous processes of destructive appropriation of natural resources. The geopolitics of sustainable development is configured in the context of economic globalization. Thus, together with the historical forms of exploitation of nature that characterized the “pillage of the Third World” (Jalée 1968), global capital promotes today a “conservationist” exploitation of nature. Biodiversity appears not only as a multiplicity of live forms, but as natural reserves –habitat of biological and cultural diversity–, valued for their genetic wealth, as eco-touristic resources or for its function in collecting carbon. If in modern-colonial times, sugar cane, cotton, banana or coffee monocultures were established in Latin America, the economic value of biodiversity is leading to a new type of landlordism: conservation areas and genetic latifundia (Porto-Gonçalves, 2002). Large areas are being transformed into conservation units or converted to modified genetic crops, ignoring that those territories that remained at the margins of the market are the areas that harbor the greatest natural wealth in water and biodiversity of the planet, having been historically inhabited by traditional populations – indigenous, peasant and maroon peoples–, who have preserved these territories as a natural and cultural patrimony.

Political ecology becomes the field where the controversies between the economization of nature and the ecologization of the economy are deployed, where different and often opposing strategies for the appropriation of nature are confronted and collide. The

discourse of sustainable development is a strategy for the economic appropriation of nature that “de-naturalizes” nature through technology, inducing a process of *transgenesis* that invades and transmutes life, searching to normalize and to legitimize the merchandizing of nature.

The merchandizing of nature deepens the differences between rich and poor countries under the principles of sustainable development. Economic-ecologic globalization justifies the comparative advantage between the more industrialized and pollutant countries and the poor countries that are being induced to value economically their capacities to capture the excess of carbon dioxide and other greenhouse effect gases dumped to the atmosphere by the rich countries and to offer the genetic resources from their reserves of biodiversity. The differences between central and peripheral countries are not only produced by the pillage and overexploitation of their resources, but are now being masked by new functions assigned to their territories through economic strategies for the appropriation of environmental goods and services. This is no longer a race for development based on comparative advantages in the endowment and accumulation of productive factors, with the purpose of breaching the technological gap and attaining a more equitable world. Rather than valuing biodiversity as a potential for alternative development, it is reduced to a means to mitigate the increasing ecological footprint of the developed countries and to continue extracting the materials needed for their unsustainable growth –oil, minerals, cellulose and foodstuff– as well as for the capital accumulation of the emergent economies of countries like China, India and Brazil.

For some governments and authors, this exchange of nature for technology represents a win-win strategy, both in economic terms and for ecological conservation. That is the fallacy promoted by the power devices and discursive strategies of the geopolitics of “sustainable development”, such as the “Programme for Reducing Emissions from Deforestation and Forest Degradation” (REDD), the “Green Economy” and the “Clean Development Mechanism” (CDM). The REDD Programme, together with other instruments for “sustainable development” pretends to reduce the negative contribution from deforestation and forest degradation to greenhouse effect emissions. Actually, it intends to re-functionalize the integration of the Third World territories in the global economy, to sustain the unsustainable growth of the more developed economies, unable to “de-materialize” their economies and to restrain their increasing emissions and ecological footprint through “green” technologies. Thus, the CDM pretends to preserve biodiversity, while actually inducing artificial forest plantations to increase the capacity to capture the excess emissions of industrialized countries and to produce natural commodities, like cellulose and other forest goods, as well as developing new products derived from biodiversity.

In this sense, an economic role is assigned to forests and biodiversity for their capacity to capture carbon and to balance the emissions of greenhouse effect gases in the purpose to mitigate global warming. This re-definition of unequal exchange in the integration of third world countries and tropical regions to the global economy functions as a subvention to continuous unsustainable economic growth, offering limited and dubious benefits to tropical countries and to the overall sustainability of the planet. In exchange for the artificiality of ecosystems in the North, to the unstoppable progress of industry and a highly capitalized and technologized agriculture, some exceptional territories are

granted the luxury of maintaining a “natural economy”, to continue living out of the generosity of Mother Earth by valuing the comparative advantages offered to them by the geographic localization of their territories.

This imposed role on nature and culture by the geopolitics of sustainable development implies, over the purpose of reducing emissions, a reduction of the natural and cultural potentials for the construction of alternative sustainable economies and of other possible worlds. In this sense, the indigenous peoples represented in the First International Forum of Indigenous Peoples on Climate Change, held in Lyon, France in September 2000, rejected the inclusion of carbon sinks under the CDM because

it reduces our sacred land and territories to mere carbon sequestration which is contrary to our worldviews and philosophy of life. Sinks in the CDM would constitute a worldwide strategy for expropriating our lands and territories and violating our fundamental rights that would culminate in a new form of colonialism. Sinks in the CDM would not help to reduce GHG emissions, rather it would provide industrialized countries with a ploy to avoid reducing their emissions at source [...] the CDM pose the threat of invasion and loss of our land and territories by establishing new regimes for protected areas and privatization. We emphatically oppose the inclusion of sinks, plantations, nuclear power, mega-hydroelectric and coal. Furthermore, we oppose the development of a carbon market that would broaden the scope of globalization (International Indian Treaty Council, 2000).

Contesting the capitalistic strategies for the appropriation of nature, traditional peoples are developing new strategies to re-appropriate their natural and cultural patrimony, to re-invent their modes of production and ways of inhabiting their life territories. Thus, the *seringueiro* Chico Mendes (1944-1988) became the leader of a new peasant's socio-environmental movement, fighting against the hegemonic economic rationality for the exploitation of nature. He proposed the extractive reserves as a new “agrarian reform”, countering the strategies of “sustainable development” and the implantation of genetic latifundia (Porto-Gonçalves, 2002, 2004). Facing the colonizing and exploitative character of the new geopolitics of globalization and sustainable development, in the conflictive field of political ecology different critical and creative responses are emerging from Latin American peoples.

3. Political Ecology in Latin America: Thinkers and Actors

After the 1970s, and throughout a period in which the modern-colonial-world-system was shaken by the environmental crisis, an innovative contribution to environmental thinking and political ecology is emerging from the South, in particular in Latin America. From the first ecological debates, the critique to the society of waste and pollution, of consumerism and productivism has been considered from the concern for the countries and Latin American peoples living under poverty and hunger, unable to consume the minimum necessary to sustain their existence. The debate over nature was mobilized by authors like Josué de Castro with his seminal lecture on “Underdevelopment: the primal cause of pollution”, presented at the Conference on Human Environment held in Stockholm in 1972, underlining the social causes of environmental unsustainability (de Castro, 2003); or by Celso Furtado (1974), that questioned the idea of development after having been one of its main defendants

Even though orthodox currents of Marxism were at first critical to the emergent ecologism, soon after, some political thinkers and different social movements in Latin America and in the Third World started assimilating the environmental question in their inquiries and political agendas. New theoretical-political currents were developed in the incipient field of political ecology to render account of an emergent “popular ecology”, “eco-pedagogy of liberation” and “eco-socialism”. The contributions to political ecology since the 1970s are as important today to understand the complex socio-environmental processes underway, as were at their time the theses of José Carlos Mariátegui (1971) for the de-colonization of indigenous peoples and of Aimé Césaire (1955), who together with Franz Fanon (2004) founded the “négritude” movement; or the Theory of Dependence and Internal Colonialism in the 1960s-1970s, with authors like Ruy Mauro Marini, Theotonio dos Santos, André Gunder-Frank and Pablo González Casanova (1965) (among others), and the Theology of Liberation and the Pedagogy of the Oppressed of Paulo Freire (Marini & dos Santos, 1999); and more recently, the inquiries on Decolonial Thinking and Coloniality of Knowledge of Aníbal Quijano, Enrique Dussel, Walter Mignolo, Arturo Escobar, Catherine Walsh, Ramon Grosfogel, Edgardo Lander and the Aymara-Bolivian sociologist Silvia Rivera Cusicanqui, among other intellectuals and scholars, to understand the historic-socio-political condition of the Latin American people (Lander, 2000; Mignolo, 2011).

A rich diversity of peoples/cultures and their different territorialities made visible a new theoretical perspective of historical time and space as the manifestation of an “unequal accumulation of times” (Santos, 1996), abandoning the linear perspective characteristic of the Eurocentric conception of time. This conception has important political implications for social movements, such as the actuality of ancestry invoked by the afro-Colombians of the South Pacific and the Andean peoples; the reversal of internal colonialism through the political re-invention of plurinationality, the co-evolution of peoples/cultures and nature/territories and the social imaginaries of sustainability (Leff, 2010).

John Murra (1956) elaborated a rich analysis of the organization of the geographical space of the original peoples of Tawantinsuyu (Quechuas and Aymaras, among others) where the Andean ecological floors were articulated from the West Pacific coast to the Chaco-Pantanal region, and interlinked to the Central Brazilian Plateau to the East. Different from the territorial division of labor and space imposed by capitalist agriculture, the principles of complementariness and reciprocity commanded the organization of geographical space in their productive practices. These conceptions of the cultural occupation of space are being re-evaluated by emergent theoretical-political approaches of original peoples’ movements to re-appropriate their ancestral territories (Tapia, 2009).

The cultural territories of Latin America are a patrimony derived from the legacy of their rich and diverse cultures, of their original and traditional knowledge that go back to the ancestral forms of occupation of the continent and to the formation of its climatic and botanical domains housed in the natural heritage of tropical forests, savannas, steppes, *punas*, moorlands, mangroves and wetlands; that is, of the wealth of biological diversity of the continent (Ab’Saber, 1977). The original populations that inhabited these areas co-evolved with the ecosystem dynamics of their territories developing a

rich collection of knowledge that, together with their biological diversity, represents a historic patrimony of the cultures that inhabit those territories, constructed mostly in relation with, and not against nature. This diversified patrimony of knowledge of indigenous peoples, peasants and maroons, subjugated by colonial and capitalist domination, encounters today scientific knowledge that supports the techno-economic appropriation of nature.

Traditional knowledge is often referred to as “local knowledge”, “popular wisdom” or “folk science”; as “indigenous science” (De Gortari, 1963), “macro-systems” (López-Luján & López-Austin, 1996), “native sciences” (Cardona, 1986), “popular knowledge or people’s science” (Fals Borda, 1981, 1987). In English literature they are named *traditional, non western or traditional ecological knowledge*. In general terms, these sets of practical, experimental and reflexive knowledge represent a cultural patrimony transmitted from generation to generation. These “systems of indigenous knowledge” (Argueta *et al.*, 1994), are embodied in practices for the sustainability of life, such as food production and health care; they are embedded in their territories conceived as spaces where identities are forged and renewed. These cultural identities include language and communication systems; history and collective memory; norms for conviviality among parents and neighbors; relations with other peoples and societies that are expressed in common customs and law (Thompson, 1991); myths and rituals, religion and festivities where the transcendental lives of the peoples are expressed.

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