
ECOLOGY AND DEVELOPMENT

On the Social Reappropriation of Nature

By Enrique Leff

1. Environmental Costs and the Value of Nature

Economic rationality has externalized nature from the process of production, destroying the ecological conditions for sustainable development. The need to control and reverse environmental degradation now demands internalizing the values and potentials of nature.

Environmental economics (neoclassical economics of natural resources and pollution) assumes that the economic system is able to internalize ecological costs and the preferences of future generations by assigning property rights and establishing market prices on natural resources and environmental services. The reintegration of nature into the economic sphere, however, faces the problem of translating conservation and restoration costs into market prices as a standard measure of value. Valuation of natural resources is not only subject to temporal and spatial ecological conditions of regeneration and productivity that are not synchronic or commensurable with economic cycles. Social interests and cultural meanings also define values and behavior that determine concrete modes of appropriation of nature through extra-economic processes — symbolic and power relations — that affect the forms and the rhythms of extraction and transformation of nature, and that cannot be translated or reduced to market prices.

The internalization of ecological costs and conditions for sustainable development implies the need to assess the ethical values and cultural meanings assigned to nature, not only its chrematistic costs. Actually, there is no economic, ecological or technological instrument that can establish the “real value” of nature in the economy. Warning against attempts to reduce diverse environmental values to a standard unit of measurement, William Kapp noted that heterogeneous physical processes are involved in the comparative evaluation of

economic, energy and environmental rationality.¹ Furthermore, economics has been left without an objective value theory;² environmental costs and the valuation of natural resources are no longer determined quantitatively, but rather depend on qualitative processes — cultural perceptions, community rights and social interests — established outside the market.

Environmentalism is revaluing nature, and this is reflected in the economy by the increase in prices of resources and environmental costs. The environmental movement transmits the ecological costs to the economic system through social resistance to the capitalization of nature. And social struggles to improve the conditions and quality of life are giving rise to new democratic values and cultural rights that are manifest in the social reappropriation of nature.

Environmentalism is generating a more decentralized development process by shifting the basis of production (capital, labor, technology) away from its economic center to its ecological and cultural conditions. From this perspective, sustainable development goes beyond the task of making conservation and development compatible, and beyond the unrealistic purpose of internalizing ecological conditions to achieve sustained economic growth. The principles of environmental rationality lead to a new conception of the *environment as potential for alternative development*, that is, for building a new productive paradigm based on nature and culture as productive forces.³ Nature becomes a means of production, an object of social reappropriation crossed over by power relations.⁴

Thus, ecological and communal production conditions appear as bases for a new productive rationality where natural, technological and

¹William Kapp, "Social Costs in Economic Development," in J.E. Ullmann, ed., *Social Costs, Economic Development and Environmental Disruption* (Lanham, MA: University Press of America, 1983).

²Enrique Leff, "La Teoría del Valor en Marx Frente a la Revolución Científico-Tecnológica," in Enrique Leff, ed., *Teoría del Valor* (México: UNAM, 1980; Elmar Altvater, *The Future of the Market* (New York, Verso, 1993).

³Enrique Leff, "La Dimensión Cultural del Manejo Integrado Sustentable y Sostenido de los Recursos Naturales," in Enrique Leff and J. Carabias, eds., *Cultura y Manejo Sustentable de los Recursos Naturales* (México: CIIH-UNAM/Miguel Angel Porrúa, 1993); Enrique Leff, *Green Production: Towards an Environmental Rationality* (New York: The Guilford Press, 1995).

⁴Enrique Leff, *Saber Ambiental: Sustentabilidad, Racionalidad, Complejidad, Poder* (México: Siglo XXI/UNAM/PNUMA, 1998).

social processes are interwoven synergistically to produce an eco-technological potential that has been hidden by the prevailing economic order. The principles of social equity, cultural diversity and political democracy open up broader perspectives for sustainable development than the greening of the economy through internalizing the costs of environmental conservation and restoration. In this way, environmentalism is generating new theories and values that question the prevailing economic order and gearing social action towards building an alternative productive rationality founded on the potential of nature and culture.

2. Ecological Distribution and Environmental Reappropriation

The relation between the economics and the politics of sustainability has opened a new field of political ecology and the search for concepts to internalize those ecological and social conditions of sustainability with economic rationality. The category of ecological distribution has been proposed to designate the environmental externalities and the social movements that emerge from "distributive conflicts," that is, to inequalities in ecological costs and their effects in a variety of social movements, including movements for environmental justice, defense of the environment, and resistance to capitalization of nature. These environmental conflicts are generated by economic rationality, but most environmental goods and services are not "traded" nor solved within the market.

Ecological distribution refers to "the social, spatial and temporal asymmetries or inequalities in the use by humans of environmental resources and services, i.e., in the depletion of natural resources (including the loss of biodiversity) and in the burdens of pollution."⁵ Thus, ecological distribution comprises the extra-economic processes (ecological and political) that articulate ecological economics to political ecology, in analogy with the concept of distribution that shifts economic rationality into the field of political economy. With this category, an effort is being made to blend the ecological conditions for survival and sustainable production, on the one hand, with the social conflict emerging from the dominant processes of destruction of nature and pollution, on the other. Ecological distribution refers to social processes by which nature is valued, but that cannot be contained by economic valuations, mobilizing social actors for material and symbolic interests (for survival, identity, autonomy and quality of life),

⁵Joan Martínez-Alier, "Distributional Issues in Ecological Economics," *Review of Social Economy*, LIII, 4, 1995.

as contrasted to economic demands for employment, income distribution and social welfare.

Mainstream economics seeks to internalize environmental externalities by assigning property rights and market prices to natural goods and environmental services. By contrast, ecological economics recognizes economic distribution (of wealth and income) as a basic determination in the valorization of nature. Ecological distribution unveils economistic approaches to the environment, to discover in ecological undervaluation and poverty the privileged mechanisms that sustain the global neo-liberal economic order; it appears as a critical notion that denounces the economic strategies of ecological and cultural domination. Notwithstanding, the category of ecological distribution does not escape the circle of economic rationality; the environment is conceived as a cost of the economic process, and not as a potential for an alternative sustainable development.

Ecological distribution appears as a conciliatory term between ecological economics and political ecology or between economic calculation and environmental rationality. It offers an argument to explain, and claim, the historical ecological debt from the rich domineering countries to the poor countries, from political conquest to uneven development. At present, if any country or social group appropriates biomass in excess of the biological production of its geographical space, or if a country or group produces polluting wastes beyond its capacities to dilute these wastes or confine them in its territory, there is an ecological debt to those who bear the costs of over-exploitation or over-pollution of nature. This implies that unequal ecological exchanges (and overall damage to the environment) could be solved with a more equitable distribution of ecological costs or by compensation to environmental justice movements.

Basically, conflicts over ecological distribution emerge as a consequence of the *destructive appropriation of nature* generated by the negation of ecological processes on behalf of the dominant economic rationality. And it is true that resistance movements against the capitalization of nature and culture emerge as a social response to inequity and injustice under this economic, institutional and juridical order. Different from ecologism in affluent societies, which is oriented by postmaterialist values, the "ecologism of the poor" is a struggle for survival, for alternative social and productive projects based on principles of diversity, identity and autonomy, as opposed to transactions and compensation established by the rules of market

valorization and negotiation characteristic of the dominant economic and political order.

The ecological debt of the rich countries to the poor countries and to dispossessed peoples throughout 500 years of ecological imperialism,⁶ has established a "gap" that will not disappear by placing the economy on an ecological basis, by the negotiation of better and more just terms of commercial exchanges, and by economic compensation won by environmental justice movements. Today, peasants and indigenous peoples organizations are starting to reappropriate and self-manage their historical patrimony of natural and cultural resources, to preserve them and transform them according to their cultural values and social interests. These principles are constructing new paths to sustainable development, different from the established economic-ecological order. In this emergent field of political ecology, the struggles for the appropriation of nature, self-management of production, cultural diversity, ethnic identities and direct democracy are defining the field of environmental conflict beyond the restricted vision derived from environmental impacts, or ecological costs, debt and distribution that dominate the discourse on economic globalization.

Notwithstanding its symbolic and its operative value to ecology, the category of ecological distribution does not depart from the basic roots of economic rationality. The use of the concept of distribution, and its application in the field of externalities, does not fulfill the purpose of internalizing environmental conflict into economics nor establishes a new paradigm for sustainable production. It does not contribute to the construction of a new productive rationality founded on ecological potentials and cultural diversity, that can eliminate the root causes of inequity and unsustainability.

3. Incommensurability, Difference and Paradigm Change

If we follow the principle of incommensurability in ecological economics, socio-environmental processes cannot be reduced to market values. As stated by Martínez-Alier, "there are no 'ecologically correct' prices, although there might be 'ecologically corrected' prices."⁷ The ecological, cultural, social and institutional factors that condition the valorization of externalities cannot be translated into economic costs and benefits; it is not possible to establish discount rates that can

⁶Alfred Crosby, *Ecological Imperialism* (New York: Cambridge University Press, 1986).

⁷Joan Martínez-Alier, *op. cit.*

actualize future preferences or complex, uncertain and long-term ecological processes.

If marginalist theory is incapable of internalizing environmental externalities through market mechanisms, it is also true that environmental movements contribute to the manifestation of ecological costs in economic calculations.⁸ However, the social resistance by such movements to the capitalist appropriation of nature, and the compensatory actions of environmental justice movements, cannot recover and transmit the real and true value of environmental externalities. Poor people are dispossessed from, and sell cheaply, their natural resources and environmental assets; but sustainability with equity and diversity will not be achieved through the equalization of income and a fairer ecological distribution under the unsustainable, homogenizing and one-dimensional economic paradigm. Sustainability can only emerge from power strategies oriented towards constructing an alternative productive rationality from the potentials of ecological and cultural diversity and the politics of difference.

The power strategies that mobilize socio-environmental movements for the reappropriation of nature stem from cultural and symbolic values as well as from material and social interests. This precludes any possibility of ending environmental degradation — which is at the root of distributional conflicts — through market mechanisms, economic evaluations and conventional political negotiations. Environmental justice establishes values that are beyond those of economic and ecological rationality, giving extra-economic meaning to social mobilizations for the defense of cultural rights and the reappropriation of nature's ecological potentials. The political force and legitimization of these environmental values are drawn from the constitution of new identities and collective rights that drive new social actors and conduct political actions towards the construction of a new social order. However, these political changes are occurring in societies where the environmental consciousness of the people is easily perverted and corrupted by the forms of simulation, co-optation and control exerted by dominant powers.

In this context, the empowerment of the people is not the redistribution of the power concentrated in the dominant global order. Power is not a commodity that can be given and distributed at will; rather it is a relation of forces that emerges from the confrontation of differentiated views and interests. Difference appears in this conflictive

⁸Leff, 1995, *op. cit.*

and complex environmental field as the "'active' discord in movement of different and differentiated forces that Nietzsche opposes to every system of metaphysical grammar in every place where culture, philosophy and science govern."⁹ And, that extends today to every project for the reappropriation of nature, life and culture, in spaces where individuals and communities confront the globalized world. Environmental rationality entails a politics of difference as an antagonistic field of alternative development styles, driven by the lack in being (Lacan), the ontology of being (Lévinas), and the diverse ethnicity that define human nature.

Underlying all conflicts of "ecological distribution" are power strategies revolving around alternative cultural meanings, social paradigms and productive rationalities. This is the antagonistic motor of environmental movements, beyond the claims for economic compensations and participation in decision-making processes, where options and possibilities are limited by economic criteria that dominate the globalized world. It is in this established order that environmental conflicts are being defined, searching for solutions in joint implementation projects, and in economic compensations to debts and damages, following procedures and negotiations set by current juridical rules and practices, and subject to dominant economic and technological powers.

Beyond the issue of incommensurability, environmental conflict opens the differentiation of material forces and symbolic processes, and of ecological claims and cultural meanings, in the social appropriation of nature. In the political arena, new social movements are emerging that articulate the defense of natural resources with struggles for democracy, autonomy and self-management. Environmental conflict develops in a strategically and politically heterogeneous field, where material processes, social interests and cultural meanings hybridize to constitute different *environmental rationalities*. Here ecological goals can be subordinated (for historical, cultural, political, strategic or tactical reasons) to demands for cultural autonomy or political democracy, as many examples demonstrate in the emergent peasant and indigenous peoples' movements in Mexico and Latin America.

The category of ecological distribution, even as a heuristic concept, is not adequate to describe the environmental conflicts generated by the economy on the quality of life of the people and their complex emergent cultural and political demands; it can only grasp them once

⁹Jacques Derrida, *Márgenes de la Filosofía* (Madrid: Cátedra, 1989), p. 53.

they are expressed in the market.¹⁰ By viewing socio-environmental conflict as issues of ecological distribution, the "environmental" character of citizens' movements for their collective identities are obscured and distorted. In such cases, the problem of "ecological distribution," or the conflict between the private and the communal appropriation of the environment, is not solved through economic negotiations, nor by using technical criteria of environmental impacts or cost-benefit analysis. New social movements are emerging that integrate cultural resistance in the defense of a way of life and in favor of the reappropriation of a patrimony of natural resources.

The notion of ecological distribution, emerging from the transposition of economics to ecological externalities by way of analogy, does not attain the status of a theoretical concept: the reason is that it does not strictly follow the principle of commensurability. The concept of ecological distribution recognizes extra-economic factors that valorize the environment, but it does not apprehend the specificity of these processes: conditions of ecological stability and productivity; cultural meanings assigned to nature; power strategies in the valuation of externalities; and social processes for the appropriation of natural resources and productive processes. What these processes convey is more than the restructuring of economic rationality in ways that internalize ecological externalities. Instead, it calls for an alternative economic paradigm, *one in which the environment is no longer an externality, but rather a potential for a new productive rationality.*

In this context, incommensurability between economy and ecology not only implies the impossibility of establishing economic values independent of property rights, income distribution, and the assignment of present values to uncertain future contingencies. The profound meaning of incommensurability for sustainable development also emerges from the concept of environment as a complex system, integrated by ecological, technological and cultural processes, where the material and the ideal hybridize, where diverse rationalities convey different values to nature and different meanings to sustainable development.¹¹

¹⁰As the popular saying goes, "you can only measure the toad once it is dead."

¹¹E. Laclau and C. Mouffe are right when asserting that "the logic of equivalence is a logic of simplification, while the logic of difference is a logic of its expansion and increasing complexity" (*Hegemony and Socialist Strategy* [London: Verso, 1985], p. 130).

The category of environmental rationality internalizes diversity and incommensurability as epistemological and political principles that challenge the homogenizing dominant order imposed by scientific and economic rationality. Incommensurability in the field of the environment not only refers to difficulties in translating energy and ecological variables into market measures, and to the impossibility of establishing a common measure for extra-economic costs and benefits. The confrontation between economic and environmental rationality implies a stronger concept of incommensurability — as the opposition of irreducible paradigms¹² — where environmental processes and values cannot be translated to market prices nor recodified as capital.¹³

Through the disymmetries and inequalities of the ecologyzed economy, the environmental crisis mobilizes the construction of an alternative paradigm of production. New concepts thus must be produced to apprehend the processes that constitute an environmental rationality, based on social justice, cultural diversity and ecological sustainability. This rationality blends new ethical and material principles in the valorization of nature, new strategies for the reappropriation of productive processes, and new meanings that mobilize the reorganization of society.

4. Cultural Diversity, Social Equity and Environmental Justice

In the views of an environmental rationality that guides the transition to sustainable development, the environment appears as a productive system based on the conditions of stability and productivity of ecosystems, as well as on the ethnic styles of the different cultures that live and have developed in these environments. The articulation of ecological, technological and cultural processes determines the forms of appropriating and transforming nature that generate a sustainable eco-technological productivity process.¹⁴ In this sense, environmental rationality is not a top-down planning process that imposes on every nation and community the laws of a global economic-ecological order. The construction of this new social rationality is guided by diverse cultural values and conflicting social interests; it is interwoven in power relationships for reappropriating nature and for the management of productive processes.

¹²Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962).

¹³Martin O'Connor, "On the Misadventures of Capitalist Nature," *CNS*, 4, 3, 1993; Leff, 1998, *op. cit.*

¹⁴Leff, 1995, *op. cit.*

The grass-roots level is where the principles of environmentalism take on their full meaning in terms of sustainable productivity, cultural diversity and social participation, in building this new productive rationality. The process sets forth the specific nature of biophysical processes, as well as the forms of cultural significance that define the environmental potential of development. There is no quantitative and standardized yardstick that can account for the diverse processes which the production of sustainable use values depend upon, or that can measure the effects of production on the quality of life defined by diverse cultural codes.

Sustainable production cannot be designed simply as flows of mass and energy and by a quantitative calculation of labor value. From the perspective of environmental rationality, the roots of sustainable development lie in the limits and potentialities of the laws of thermodynamics; of ecological productivity and cultural meanings; of the balance between negentropic biomass formation through photosynthesis and entropy generated by technological transformation of matter and energy in productive processes. These processes depend on the conservation of ecosystems that sustain the production of biotic resources and environmental services; on the energy efficiency of the technological processes; on the symbolic processes that underlie the cultural valuation of natural resources; and on the political processes that determine differentiated strategies for the social appropriation of nature.

Ecological sustainability does not involve only the conservation of nature; environmental degradation and ecological potential are inextricably linked to economic, social and cultural conditions. Thus, environmental degradation generates a vicious cycle of poverty which, in turn, accentuates ecological deterioration. A virtuous spiral of sustainable development demands a social participatory management of natural resources and control of polluting emissions together with a more equitable — ecological and social — distribution of environmental costs.

Social justice and democracy are basic conditions for attaining a sustainable development. But in order to meet our responsibility with respect to future generations, we should first address the question of *intra*-generational solidarity, which implies the access of present nations and social groups to the natural resources and environmental services of the planet. However, as I have argued, the social reappropriation of nature poses questions of social justice that cannot be comprehended and internalized as problems of ecological distribution, or a more equitable

distribution of the costs of environmental degradation and better evaluation of environmental assets in economic accounting.

Equity in the reappropriation of nature is not solved through evaluations of the costs and benefits involved in the actual forms of nature exploitation. Environmental democracy departs from the politics of equivalence,¹⁵ to develop in a new field of the politics of difference. This politics challenges the possibility of achieving social justice through the commensurability of costs, the homogenization of needs, and the normalization of demands and rights over nature, defined in the context of differentiated cultural meanings and opposing social interests, and expressed in struggles and alternative strategies for the reappropriation of nature.

The conditions on community existence depend on the reaffirmation of community property rights to the heritage of natural resources; of rights to preserve community cultural identity; of autonomy to redefine community lifestyles and reconstruct community production processes. The emergence and legitimization of environmental, communal and indigenous peoples' rights are transforming the norms established by the dominant juridical and legal system, in order to open spaces to express social demands and to construct new utopias. The claims of indigenous groups in their struggles for dignity, autonomy, democracy, participation and self-management, go beyond claims for justice in terms of better distribution of benefits derived from the prevailing mode of production and the dominant political system.

The reappropriation of nature proposes a principle of *equity in diversity*;¹⁶ it involves the cultural autonomy of the communities, the self-determination of needs and the self-management of the ecological potential in each region undergoing alternative development styles. These processes define production conditions and the lifestyles of diverse groups of the population in relation to the sustainable management of their environment. Property rights are defined through

¹⁵"Justice is the demand for equity, for 'fair play,' and a share in the benefits of life that are commensurable with one's contribution. In Thomas Jefferson's words, it is 'equal and exact...' based on a respect for the principle of equivalence," see Murray Bookchin, *Remaking Society: Pathways to a Green Future* (Boston: South End Press, 1990), p. 96.

¹⁶G. Grünberg, ed., *Articulación de la Diversidad. Pluralidad Étnica, Autonomías y Democratización en América Latina* (Quito: Ediciones Abya-Yala, 1995).

social movements to appropriate nature and alternative practices for the use of resources that depend on distinct cultural and social conditions.

Equity cannot be defined by a standard pattern of well-being; it does not depend only on the distribution of the stock of resources available and of the costs of global environment pollution. Equity can only be achieved by subverting and abolishing any and all barriers to the autonomy of peoples and by creating conditions for appropriating the ecological potential of each region through the cultural values and social interests of each community.

Ecological distribution and environmental justice are still generally viewed with modern epistemological lenses through which the real is perceived as differentiated ontological orders which are capable of being (and *should* be) valued and measured. This veils the non-objective character of the meanings attributed to nature and culture. From the perspective of a non-essentialist political ecology,¹⁷ the social appropriation of nature claims a politics of difference that is beyond logical contradiction and ontological incommensurability; it is rather a struggle among alternative paradigms, where radical negativity faces the strategies of capital and economic rationality through social conflict that subverts the dominant social order through the hegemony of new identities being constituted in the process of reappropriation of nature.

The strategic question in the construction of this environmental rationality is the possibility of establishing alliances from the constitutive diversity and difference of environmental interests, arising from spaces of marginality and externality. From the alterity of potential alternatives, diverse rationalities and discourses can articulate to weave solidarities among different social actors, to establish an antagonistic hegemony capable of opposing the dominant economic rationality.¹⁸

The environmental movement can thus be conceived without any essentialism and subjectivism, and free from the predetermination of structuralism and holism, as the political expression of emergent, complexified identities. New social subjects and collective interests are in fact being mobilized from the resistance to the capitalization of nature and culture, to a practically unlimited construction of meanings that guide the reconstruction of life styles and social identities. In this way, the domination of economic rationality — as the homogeneous

¹⁷Arturo Escobar, "After Nature: Steps to an Antiessentialist Political Ecology," *Current Anthropology*, 40, 1, 1999.

¹⁸Laclau, and Mouffe, *op. cit.*

space in which historical interests and subjective meanings are measured, codified and unified — can be rejected and a different rationality constructed.

5. Environmental Rights and the Social Reappropriation of Nature

Beyond the perspectives of conservationism, biocentrism and managerialism, environmentalism is being redefined on the basis of principles of sustainability and democracy, based on values of difference, diversity and autonomy. Indigenous and peasant farmer community struggles are being articulated to new cultural rights with claims for access to, and appropriation of, nature, with underlying power strategies that define alternative production practices. New cultural and environmental rights are incorporating demands for self-management of the production conditions and lifestyles of the people. This implies a process of reappropriation of nature as a basis for survival and as a condition for generating an endogenous and self-determining process of development.¹⁹

This line of thinking leads to the question, who owns nature? Who grants the right to inhabit the planet, to exploit the earth and natural resources, to pollute the environment? In the dominant discourse on sustainable development, economic rationality and the "objective" laws of the market are expressed as the last judgment on the relationship between human beings and nature. In resistance to the power of the global economy, the mobilization of people on all continents is generating new power strategies for constructing an environmental rationality enabling new paradigms and practices for sustainable development.

The appropriation of nature reintroduces the class struggle, not only over control of the means of production (the industrialized productive forces of nature) but also of the natural means and conditions of production. In contrast to the appropriation of means of production guided by a one-dimensional view of natural forces first unleashed then constrained by technology, environmentalism here means the appropriation of nature as a complex process of production, based on

¹⁹J. Moguel, C. Botey and L. Hernández, *Autonomía y Nuevos Sujetos Sociales en el Desarrollo Rural* (México: Siglo XXI Editores, 1992); Enrique Leff, "Los Nuevos Actores Sociales del Ambientalismo en el Medio Rural," in H. Carton de Grammont and H. Tejera, *La Sociedad Rural Frente al Nuevo Milenio*, Vol. 4, *Los Nuevos Actores Sociales y los Procesos Políticos en el Campo* (México: UNAM/INAH/UAM/Plaza y Valdez Editores, 1996).

ecological, technological and cultural potentialities guiding and supporting alternative strategies for the sustainable use of resources.

In response to the dispossession and marginalization of majority groups of the population and the ineffectiveness of the state and market logic to provide basic goods and services, the emerging society is claiming its right to participate in decision-making on public policies that affect its living conditions and the sustainable management of its productive resources. These movements are gaining strength with the legitimization of social struggles for human and cultural rights in an increasingly democratic world.

In the field of environment, new human rights are incorporating the protection of the commons (the environmental goods and services of humanity), as well as the right of all people to develop their full potential. New cultural rights to ethnic spaces, indigenous languages, and cultural practices are incorporating community, political and economic demands that include collective control of their resources, self-management of their productive processes and self-determination of their lifestyles. These new social movements are redefining property rights and forms of ownership, and the appropriation and use of natural resources.

The conservation of biodiversity is becoming a paradigmatic example of the clash of interests in the appropriation of nature. The strategies of the transnational biotechnology companies to manage the genetic material of biotic resources stands in opposition to the rights of indigenous peoples of the tropics over their natural resources. This issue cannot be solved through economic compensation. It is impossible to calculate the "real" economic value of biodiversity (the result of centuries and millennia of ethno-ecological co-evolution) in terms of capital and labor-time invested in the conservation and production of genetic material, nor by the current market value of its products nor by estimating their future economic value. The dilemma posed by global biodiversity is the appropriation of nature by capital through intellectual property rights versus the rights of indigenous peoples over their heritage of natural resources resulting from biological evolution, the cultural selection of species and the economic use of natural resources.²⁰

²⁰H. Hobbelink, "La Diversidad Biológica y la Biotecnología Agrícola," *Ecología Política*, 4, 1992; Joan Martínez-Alier, "The Merchandising of Biodiversity," *Etnoecológica*, 3, 1994.

In this regard, the peoples of the Amazon forest have developed productive strategies for the self-management of "extractivist reserves." In Mexico, the establishment of the Los Chimalapas peasant farmer biodiversity reserve is prompting the communities to fight for regularization of the ownership of their land and to exercise effective control over the use of their resources. The entry of indigenous and peasant farmer communities into the globalization process is leading to important struggles of resistance and reorientation of development, leading towards constitution of new identities through the politics of cultural diversity.²¹

Peoples and communities are thus giving new significance to the discourse on democracy and sustainability to reshape their ethno-eco-development styles. This process of democratization is giving rise to unprecedented movements for the reappropriation and productive management of biodiversity, and the habitat in which the native communities have developed and where their future life projects are being defined.

6. Autonomy, Self-management and Democracy

The real possibility of eradicating poverty and improving the quality of life of the indigenous and peasant farmer populations depends on the conditions for access, management, and control of their productive resources. The participatory resource management principle is thus permeating the struggles for autonomy, yielding new forms of direct and substantive democracy. Democracy in the productive process points towards the reappropriation of natural resources and the collective management of the communities' environmental goods and services.

In this regard, some of the new social movements in the rural areas of Latin America are transcending traditional claims in the economic sphere for more employment, better salaries and better distribution of wealth; in the political sphere for greater plurality and participation in decision-making and in the institutionalized system of parties; and in the cultural sphere for defense of cultural values and ethnic diversity.²²

The emerging rural movements are building solidarity links not only in their rejection of neoliberal policies that generate economic

²¹Arturo Escobar, "Cultural Politics and Biological Diversity: State, Capital and Social Movements in the Pacific Coast of Colombia," in O. Starn and R. Fox, eds., *Culture and Social Protest: Between Resistance and Revolution* (New Brunswick: Rutgers University Press, 1997).

²²G. Giménez, "Los Movimientos Sociales: Problemas Teórico-Metodológicos," *Revista Mexicana de Sociología*, LVI, 2, 1994.

exploitation, political marginalization, cultural segregation and the degradation of nature. The movements are not only struggling for greater equity and participation within the established order, but also for the building of a new social order — for a reform of the state that will include indigenous peoples as equals, which implies recognizing their political differences, their ethnic identities and cultural rights.²³

These social struggles for democracy mobilize the construction of a new political order and a new productive paradigm. Although the environmentalist seed is not always evident in the discursive and political strategies of the emerging popular movements — focused on struggles for cultural rights and political autonomy of indigenous and peasant farmer communities and for democracy as a requirement for reappropriating their cultural and ecological means of production — many are expressing demands for a re-evaluation of their traditional practices of natural resources uses, the self-determination of their life styles and the self-management of their productive processes.²⁴

From this perspective, sustainable development from the roots of ecology and culture delineates its difference to the capitalizing of nature and ecologizing the economic order. The construction of an environmental rationality is achieved through the socialization of nature and community management of resources, founded on principles of ecological and cultural diversity. In that regard, democracy and equity redefine their meaning in terms of a politics of difference that orients the social reappropriation of the environment.

²³P. González Casanova and M. Roitman, eds., *Democracia y Estado Multiétnico en América Latina* (México: La Jornada Ediciones/CIIH-UNAM, 1996); Leff, 1996, *op. cit.*

²⁴Instituto Indigenista Interamericano, "Política Indigenista 1991-1995," *América Indígena*, 50, 1, 1990; H. Díaz Polanco, *Autonomía Regional. La Autodeterminación de los Pueblos Indios* (México: Siglo XXI/UNAM, 1991); Moguel, et al., *op. cit.*; R. Torres, *Entre lo Propio y lo Ajeno: Derechos de los Pueblos Indígenas y Propiedad Intelectual* (Quito: COICA, 1997); M. Gomez, ed., *Derecho Indígena* (México: INI/AMNU, 1997).