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# Marxism and the Environmental Question: From the Critical Theory of Production to an Environmental Rationality for Sustainable Development

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The contribution to the discussion on Marxism and ecology in this issue of CNS was written by CNS Editor Enrique Leff (Mexico), whose classic, *Ecología y Capital*, still has not appeared in English. Ruth MacKay did the translation. Contributions to the debate by Michael Perelman, Gunnar Skirbekk, James O'Connor, Victor Toledo, and others will appear in future issues of CNS — J. O'C.

## **Marxism and the Environmental Question: From the Critical Theory of Production to an Environmental Rationality for Sustainable Development\***

*By Enrique Leff*

### **1. Introduction**

It might appear "antiparadigmatic" today to pose the environmental question from a Marxist point of view and reformulate Marxism from an environmentalist perspective. The collapse of really existing socialism and the international consensus in favor of a strengthened new global order based on market economy have also undermined the legitimacy of the Marxist theory of history and political economy — a theory which, despite having generated critical analysis concerning the causes of environmental problems that arise from capital accumulation and economic rationality, has not integrated nature (or ecological processes) into the general conditions and process of production.

Marxism in fact offers the theoretical basis needed to demystify the dominant neoliberal discourse and to clarify the current conflict

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between the conditions of sustainable capital expansion of investment, production, markets and ecological and environmental sustainability. Modernity has led to the delegitimization and absence of a critical theory of society and the environment. The discourse of sustainable development and environmental issues are considered part of the transition to a liberal democracy. Although it has generated a social response, visible in the environmental movements, the latter still lack a theoretical framework for the construction of an ecologically rationality.

The ecological vacuum of conventional historical materialism is increasingly evident. Several strains of analysis and reflection reflect the economic growth on environmental degradation and natural resources: the difficulty of quantifying wealth, as well as long-term economic, social processes, in terms of market values or prices of capital accumulation from the point of view of natural resource depletion; and the inability to measure negative impacts on nature and society by using indicators and instruments.

Starting with these questions, we can reformulate the Marxist theory of production that accounts for the general conditions of natural processes in the general conditions of production. The construction of an environmental rationality based on the development of ecotechnological productivity, participatory management, and ecological sustainable development. Marxism offers an historical, economic, and social study of environmental problems, and a theoretical framework to be reworked in a way to incorporate the productive process, the environmental perspective, and the knowledge about the socio-environmental and ecological conditions of sustainable development.

This essay will treat some of the questions that environmentalism poses to Marxist political economy and open up for an eco-social theory of production and historical materialism, as a critical theory of history and

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## The Environmental Question: Political Theory of Production and Environmental Rationality for Sustainable Development\*

By Enrique Leff

### 1. Introduction

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between the conditions of sustainable capitalism (based on the expansion of investment, production, markets and profits) and those of ecological and environmental sustainability. Yet the discourse of modernity has led to the delegitimization and abandonment of Marxism as a critical theory of society and the environment. In the acritical discourse of sustainable development and "natural capital," environmental issues are considered part of the "new economic order" and of the transition to a liberal democracy. Although these issues have generated a social response, visible in the new environmental movements, the latter still lack a theoretical framework and a strategic program for the construction of an ecologically sustainable productive rationality.

The ecological vacuum of conventional economic theories and historical materialism is increasingly evident and has given rise to several strains of analysis and reflection regarding the effects of economic growth on environmental degradation and the destruction of natural resources: the difficulty of quantifying natural and cultural wealth, as well as long-term economic, social, and ecological processes, in terms of market values or prices; the irrationality of capital accumulation from the point of view of energy degradation and natural resource depletion; and the inability to control and internalize negative impacts on nature and society by using economic concepts and instruments.

Starting with these questions, we can begin to reconstruct a Marxist theory of production that accounts for the incorporation of natural processes in the general conditions of production and the construction of an environmental rationality based upon the principles of ecotechnological productivity, participatory environmental management, and ecological sustainable development. Whereas Marxism offers an historical, economic, and social perspective on the study of environmental problems, and a theoretical paradigm that can be reworked in a way to incorporate the environment into the productive process, the environmental perspective offers Marxism knowledge about the socio-environmental and ecological conditions of sustainable development.

This essay will treat some of the challenges that environmentalism poses to Marxist political economy and the paths opened up for an eco-social theory of production. I stress that historical materialism, as a critical theory of history and political economy, must

rework its categories of nature and culture, placing them in the very center of the productive process. It also must question the capitalist and socialist models of economic growth based on maximization of profits and short-term economic surplus. I will suggest a new theory of production (a new productive rationality) that incorporates the environment into the productive process, not as externalities of the productive system nor only as a general condition for sustainable production, but rather *as potential for an alternative productive rationality*. This provides a new orientation toward, and basis in, the development of the forces of production that integrate cultural, technological, and ecological processes, thus generating productive processes that are equitable and sustainable. These questions will be posed from a political and a theoretical perspective, that is, considering the environmental potential of sustainable development and the political power of social movements in the construction of environmental rationality.

## 2. Historical Materialism and the Environmental Crisis

How does Marxism deal with the environmental problems of our time? Although Marx could not predict the magnitude of the current environmental crisis and the extent of the global ecological imbalance, he did anticipate the effects of the capitalist mode of production on the destruction of planetary resources and the loss of soil fertility. But Marx's account of the effect of production on the destruction of nature did not generate a theoretical response, or an internal criticism of Marxist concepts. Nature was the object of reflection by Marxism insofar as it was seen as a superstructural formation produced by various cultures at different historical moments. Marxism, in order to establish itself as a social science, had to separate itself from the naturalist ideology of its time, leading to the fertile development of the theory of social determination over nature, which included nature's incorporation in the sciences and technology but excluded its specific contribution to the creation of wealth. It was only the ecological crisis that has become manifest over the past 25 years that set off an incipient reflective process within Marxism concerning its theoretical concepts and epistemological bases, giving rise to a critical consciousness that today coincides with the collapse of really-existing socialism.

Environmental discourse during the 1970s was regarded skeptically by some self-proclaimed Marxist theorists as "false

consciousness"<sup>1</sup> regarding the fundamental crisis, behind which lay the need to open up (the anti-pollution industry) to provide an outlet. The environmental issue itself, the need to preserve and ecological balances, the basis for all sustainable productive processes, was almost completely ignored.

The unmasking of environmentalists' "false consciousness" conceals one of the basic notions of historical materialism and of the building of socialism: the transition to socialism and of the society/nature relationship only as a result of the elimination of the scarcity of resources. The transition to socialism would be led by class struggle. The possibilities would depend upon the development of the forces of production and, in particular, on the forces of scientific-technological revolution — thus the unrestrained development of productive forces, and during the transition and building of socialism (under different forms of ownership and control of production), both of which has provoked environmental deterioration. This ideological crisis is the ecological limits of growth and the ecological crisis of sustainable development of the forces of production, recognized by Marxist theoreticians only in the late 1970s.

The crisis of Marxism is not only the result of the collapse of really existing socialism and its self-destructive forces of production. It can also be attributed to the crisis of historical materialism as a science of history. It is understood capital as a relationship of exploitation and the rationalization of the development of the forces of production, eliminating internal crises of overproduction and not incorporating the forces of nature, defined as

<sup>1</sup> H.M. Enzenberger, "A Critique of Political Ecology," *Journal of Environmental Issues*, 1973.

<sup>2</sup> A. Granou, "Le Capitalisme Face à la 'Non Croissance'," *Revue de Géographie*, 1973.

<sup>3</sup> E. Leff, *Ecología y Capital* (Mexico: UNAM, 1986); J. O'Connor, "Combined and Uneven Development: The Ecological Crisis: A Theoretical Introduction," *Race and Class*, 1988.

nature and culture, placing them in the very process. It also must question the capitalist and economic growth based on maximization of profits (the surplus, I will suggest a new theory of productive rationality) that incorporates the productive process, not as externalities of the only as a general condition for sustainable *as potential for an alternative productive* as a new orientation toward, and basis in, the forces of production that integrate cultural, ecological processes, thus generating productive and sustainable. These questions will be asked from a theoretical perspective, that is, considering the potential of sustainable development and the social movements in the construction of

### Marxism and the Environmental Crisis

to deal with the environmental problems of our world could not predict the magnitude of the current crisis, the extent of the global ecological imbalance, or the effects of the capitalist mode of production on the depletion of resources and the loss of soil fertility. But the effect of production on the destruction of nature was the object of reflection by Marxism as a superstructural formation produced by certain historical moments. Marxism, in order to be a social science, had to separate itself from the time, leading to the fertile development of the production over nature, which included nature's resources and technology but excluded its specific production of wealth. It was only the ecological crisis over the past 25 years that set off an incipient Marxism concerning its theoretical concepts and crises, giving rise to a critical consciousness that the collapse of really-existing socialism.

The discourse during the 1970s was regarded by self-proclaimed Marxist theorists as "false

consciousness"<sup>1</sup> regarding the fundamental causes of the economic crisis, behind which lay the need to open up new productive sectors (the anti-pollution industry) to provide an outlet to reinvest profits.<sup>2</sup> The environmental issue itself, the need to preserve natural resources and ecological balances, the basis for all sustainable economic and productive processes, was almost completely ignored.

The unmasking of environmentalists' "false consciousness" still conceals one of the basic notions of historical materialism's analysis of capitalism and of the building of socialism: that the transparency of social relations and of the society/nature relationship would come about only as a result of the elimination of the scarcity that characterizes the precapitalist and capitalist modes of production. Therefore, although the transition to socialism would be led by class struggle, its objective possibilities would depend upon the development of the forces of production and, in particular, on the forces of nature released by the scientific-technological revolution — thus the will to permit the unrestrained development of productive forces, both under capitalism and during the transition and building of socialism (in the latter case under different forms of ownership and control of the means of production), both of which has provoked various types of environmental deterioration. This ideological inertia has ignored the ecological limits of growth and the ecological bases for a lasting and sustainable development of the forces of production, which was recognized by Marxist theoreticians only in the late 1980s.<sup>3</sup>

The crisis of Marxism is not only the result of the collapse of really existing socialism and its self-destructive development of the forces of production. It can also be attributed to certain blind spots in historical materialism as a science of history. Although Marxism understood capital as a relationship of exploitation and promised the rationalization of the development of the forces of production by eliminating internal crises of overproduction and profit-making, it did not incorporate the forces of nature, defined as productive potential, in

<sup>1</sup> H.M. Enzenberger, "A Critique of Political Ecology," *New Left Review*, 84, 1974.

<sup>2</sup> A. Granou, "Le Capitalisme Face à la 'Non Croissance'," *Les Temps Modernes*, 236, 1973.

<sup>3</sup> E. Leff, *Ecología y Capital* (Mexico: UNAM, 1986); J. Ely, "Lukacs' Construction of Nature," *CNS*, 1, 1988; J. O'Connor, "Combined and Uneven Development and Ecological Crisis: A Theoretical Introduction," *Race and Class*, 30, 3, 1989.

its theory of social labor.

Marx turned Hegelian dialectics and grounded contradiction in the social relations of production. But he could not escape from the state of knowledge of his time, and he searched for a unit of value quantification based on the simple and direct labor to which capital reduces laborpower. The concept of socially necessary labor time, upon which value is measured, is devised using capital's exploitative relationship with labor. However, this measurement of value excludes the forces and conditions of the production of nature, which in their diversity and ecosystemic complexity are irreducible to homogeneous units. Marx's theoretical basis thus is put into question not only as a result of ecological destruction and capital's inability to assign a value to natural resources (critical problems that remained external to the purpose of *Capital*) but also because of the indeterminate effects introduced by technological progress in the calculation of socially necessary labor time as a measure of value.<sup>4</sup>

Marx's theory of production does not incorporate natural and cultural conditions that participate in the production of value. Also, it is incapable of putting a value on natural and cultural resources. The environment question thus forces Marxism to reformulate its teleological vision of history, which is based upon a one-dimensional development of productive forces. The environmental question also poses the need to respond to present-day world transformations and power relations in which new social relations and historical subjects emerge, creating new conditions for social labor.

The need to incorporate ecological processes into the analysis of production is opening up a series of theoretical developments and methodological approaches. One problem that arises is whether or not the processes that determine the formation of natural resources and the ecological conditions of productive processes are the object of another science, ecology, which is external to historical materialism, understood as a critical theory of the capitalist mode of production. This problem opens up two options. The first is the possible articulation of two sciences, ecology and historical materialism, in which ecology would account for the structure and workings of the ecosystemic base of natural resources, or of the constraints, norms and ecological support

<sup>4</sup> E. Leff, "El Concepto de Valor en Marx Frente a la Revolución Científico-Tecnológica," in E. Leff, ed., *Teoría del Valor* (México: UNAM, 1980).

for the production process, which are external contradictions.<sup>5</sup> The second is to see the articulation of different productive processes (economic, and technological) and ecologically codeterminant processes of production, leading to a reformulation not only of the theory of capitalist production but also of all sustainable development processes.<sup>6</sup>

This reconstruction of the theory of production and natural processes, goes beyond a Marxism understood as a mediator in all processes of the production of nature.<sup>7</sup> In fact, some authors have tried to rescue Marxism based on the philosophical discourse on the relation between society and nature, and to uncover a second, non-reducible contradiction in his theoretical discourse. Nevertheless, in Marx's theory, as a second contradiction of capital that is not a contradiction, "an effect that is overdetermined by the production of labor."

General categories of nature and labor, however, are not one to capture the specificity of the relations between production and its environment. Yet the concept of production opened up an important way of thinking about societies and even allowed one to think about the cultural organization (family, marriage and kinship relations, representations and ideological formations) and its environment in the development of productive forces and use patterns.<sup>8</sup> These contributions by Marxist theory are important but they provide an insufficient theoretical basis for analyzing ecological and cultural processes affecting

<sup>5</sup> R. Passet, *L'Economique et le Vivant* (Paris: Payot, 1977); R. Passet, *Relaciones Sociedad-Naturaleza en el Materialismo Histórico* (México: UNAM, 1977); R. Passet, *Biosociología y Articulación de las Ciencias* (México: UNAM, 1977).

<sup>6</sup> E. Leff, *Ecología y Capital: Hacia una Perspectiva Ecológica* (México: UNAM, 1986); E. Leff, "Ecotechnological Production and the Integrated Management of Natural Resources," *Social Science Information* 24 (1986): 1-12.

<sup>7</sup> A. Schmidt, *El Concepto de Naturaleza en Marx* (México: UNAM, 1977).

<sup>8</sup> M. Godelier, *Economía, Fetichismo y Religión en la Prehistoria* (México: Siglo XXI Editores, 1974); C. Meillassoux, *Le Sexe et le Social* (Paris: Éditions Anthropos, 1977).

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for the production process, which are external to capital's internal contradictions.<sup>5</sup> The second is to see the environment as the articulation of different productive processes (natural, cultural, economic, and technological) and ecological processes as codeterminant processes of production, leading to a paradigmatic reformulation not only of the theory of capitalist production but also of all sustainable development processes.<sup>6</sup>

This reconstruction of the theory of production, integrating social and natural processes, goes beyond a Marxist concept of nature understood as a mediator in all processes of the social appropriation of nature.<sup>7</sup> In fact, some authors have tried to rescue an "ecological" Marx based on the philosophical discourse on the relationship between society and nature, and to uncover a second, non-explicit contradiction in his theoretical discourse. Nevertheless, in Marx, nature appears less as a second contradiction of capital than as a "secondary contradiction," an effect that is overdetermined by the exploitation of labor.

General categories of nature and labor, however, do not permit one to capture the specificity of the relations between a particular social formation and its environment. Yet the concept of a socioeconomic formation opened up an important way of studying precapitalist societies and even allowed one to think about the relationship between cultural organization (family, marriage and kinship relations; religious representations and ideological formations) and the natural environment in the development of productive process and resource use patterns.<sup>8</sup> These contributions by Marxist theorists are important, but they provide an insufficient theoretical basis for analyzing the ecological and cultural processes affecting today's sustainable

<sup>5</sup> R. Passet, *L'Economique et le Vivant* (Paris: Payot, 1979); E. Leff, "Sobre la Relaciones Sociedad-Naturaleza en el Materialismo Histórico," in E. Leff, ed., *Biosociología y Articulación de las Ciencias* (México: UNAM, 1981).

<sup>6</sup> E. Leff, *Ecología y Capital: Hacia una Perspectiva Ambiental del Desarrollo* (México: UNAM, 1986); E. Leff, "Ecotechnological Productivity: A Conceptual Basis for the Integrated Management of Natural Resources," *Social Science Information*, 25, 3, 1986.

<sup>7</sup> A. Schmidt, *El Concepto de Naturaleza en Marx* (México: Siglo XXI, 1976).

<sup>8</sup> M. Godelier, *Economía, Fetichismo y Religión en las Sociedades Primitivas* (México: Siglo XXI Editores, 1974); C. Meillassoux, *Terrains et Théories* (Paris: Editions Anthropos, 1977).

development of productive forces. From an environmentalist perspective, we should see culture not only as superstructural values or as a structure that takes the place of the productive base in traditional, non-capitalist societies; rather we should translate cultural values and organization into a principle of productivity in the sustainable use of natural resources.<sup>9</sup>

Recently we have seen the emergence of an eco-Marxist current that emphasizes nature's function in supporting or limiting production. But because it lacks a theory explaining the transition toward, and construction of, socialism based on environmental rationality, this approach does not incorporate natural processes into the productive process itself, leaving intact the paradigm of the capitalist mode of production. Therefore, there is a need to establish a concept of nature that is appropriate for the building of socialism based on the social use and democratic and participatory management of the environment viewed as a resource base, means of production, condition of existence, which in turn determines different production lifestyle patterns.<sup>10</sup>

The environment is more than just an element of the conditions of production or a cost of economic growth. We must see it as productive potential, as part of the social forces of production, in a productive paradigm that is not economic yet pertains to political economy, since the environmental rationality of production involves environmental management that includes social participation regarding resource appropriation. The construction of environmental rationality will permit a resolution of the contradictions between conservation and growth, between environment and development, between the self-destructive appropriation of nature by capital and the aim of subsuming the appraisal of the environment under the concept of natural capital.

Environmental management combines the political conditions of direct democracy with conditions of equitable and sustainable production. Environmental democracy is not only counterposed against state bureaucratization but also offers a way in which the environmental movement participates in the deconstruction of market

<sup>9</sup> E. Leff, "La Dimensión Cultural del Manejo Integrado, Sustentable y Sostenido de los Recursos Naturales," in E. Leff and J. Carabias, Coords., *Cultura y Manejo Sustentable de los Recursos Naturales* (México: CIIH-UNAM/Miguel Angel Porrúa Eds., 1992).

<sup>10</sup> Ely, *op. cit.*

mechanisms and the creation of a new productive

In this sense, the environmental challenge beyond a synthesis of orthodox Marxism and the incorporation of energy rationality into the method. The aim of eco-Marxism is to integrate new development of the forces of production and society through a theory that encompasses not only externalities but nature as a force of productive potential. That requires the elaboration of new of equitable and sustainable production process along planning, controlling, and monitoring the environmental impact assessment, integration of sustainability into economic accounting, methodology, ecological bases for sustainable agriculture, the political process is opened up for general decision-making by civil society.

This environmentalist perspective offers surface and an ecological base, and a democratic to productive rationality based on the principle of management of productive resources via the social of production, understood to include natural resources.

### 3. Marxism and Environmental Conditions From Critical Analysis to Purposeful

Increased production necessarily brings about productive consumption of raw materials, a extraction and transformation of inputs, and the But the failure to put a value on natural resources imbalances, the decline in soil fertility, and renewable resources are not reflected in the value price formation of natural use values, while the reappraisal of capital is reflected in the destruction of capital does not take into account.

<sup>11</sup> E. Leff, "Cultura Democrática, Gestión Ambiental América Latina," *Ecología Política*, No. 4, 1992.

productive forces. From an environmentalist perspective, we see culture not only as superstructural values or the place of the productive base in traditional, rather we should translate cultural values and principle of productivity in the sustainable use of

seen the emergence of an eco-Marxist current that functions in supporting or limiting production. A theory explaining the transition toward, and socialism based on environmental rationality, this incorporates natural processes into the productive context of the paradigm of the capitalist mode of production. Here is a need to establish a concept of nature in the building of socialism based on the social use of participatory management of the environment, the means of production, condition of existence, and different production lifestyle patterns.<sup>10</sup>

is more than just an element of the conditions of economic growth. We must see it as a part of the social forces of production, in a way that is not economic yet pertains to political and environmental rationality of production involves an element that includes social participation regarding the construction of environmental rationality. The construction of environmental rationality involves the contradictions between conservation and development, between the self-interest of nature by capital and the aim of subsuming development under the concept of natural capital.

management combines the political conditions of the conditions of equitable and sustainable environmental democracy is not only counterposed to industrialization but also offers a way in which the environment participates in the deconstruction of market

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mechanisms and the creation of a new productive rationality.<sup>11</sup>

In this sense, the environmental challenge to Marxist theory goes beyond a synthesis of orthodox Marxism and the new ecology, or the incorporation of energy rationality into the metabolism of production. The aim of eco-Marxism is to integrate new principles into the development of the forces of production and the democratization of society through a theory that encompasses not only economic costs and externalities but nature as a force of production, as productive potential. That requires the elaboration of new concepts concerning an equitable and sustainable production process along with instruments for planning, controlling, and monitoring the environment (through environmental impact assessment, integration of new indicators of sustainability into economic accounting, methodologies for territorial layout, ecological bases for sustainable agriculture, etc.). At the same time, the political process is opened up for greater participation in decision-making by civil society.

This environmentalist perspective offers socialism with a human face and an ecological base, and a democratic transition toward a new productive rationality based on the principles of participatory management of productive resources via the socialization of the means of production, understood to include natural processes and cultural resources.

### 3. Marxism and Environmental Conditions of Production: From Critical Analysis to Purposeful Discourse

Increased production necessarily brings about an increase in the productive consumption of raw materials, a heightened rhythm of extraction and transformation of inputs, and the production of waste. But the failure to put a value on natural resources means that ecological imbalances, the decline in soil fertility, and the depletion of non-renewable resources are not reflected in the value of capital and in price formation of natural use values, while the accumulation and reappraisal of capital is reflected in the destruction of resources that capital does not take into account.

<sup>11</sup> E. Leff, "Cultura Democrática, Gestión Ambiental y Desarrollo Sostenido en América Latina," *Ecología Política*, No. 4, 1992.

The environmental crisis thus marks the explanatory limits of a theory in which natural use values are valued only insofar as they incorporate labor time or internalize the "scarcity" of natural resources through the market. Social labor must be redefined to mean necessary labor for production and renewal of production conditions in the framework of a new and changing international division of labor, the scientific-technological revolution, the enhancement or degradation of environmental potential, and global changes. The question of the environment challenges the theoretical status of the concept of social labor and the concept of value, not only in the widened reproduction of capital or in the restricted fields of environmental protection practices and the capitalization of nature, but for the construction of a productive paradigm based on environmental rationality within the context of which production and the productivity of social labor are bound together with the ecological conditions for sustainable and lasting production (not for the production and reproduction of capital).

Marxism is not merely enriched with environmental concepts. At the same time, it contributes to an environmentally critical and positive theory of production. First, Marxism posits the social and political character of sustainable development and offers a theoretical framework within which to analyze the connections among various processes, the links between different conditions of production — the "objective" and "subjective" conditions for the construction of a paradigm of sustainable development — and an analysis of the new environmental movements, not only in relation to their contribution to a postmodern culture of difference, but also with respect to the opposition and conjuncture of political and class interests in the construction of a sustainable and lasting productive process.

In this conceptual exchange between environmentalism and Marxism, we see new possibilities for a critical analysis of the relationship between society and nature — and between the economy and resources — and for an eco-Marxist theory of production.

#### 4. Natural and Ecological Limits of Production

An analysis of nature as a limit or norm for production brings us to the question of limits on growth under current conditions of capital expansion and technological change.<sup>12</sup> It also leads us to analyze, on

<sup>12</sup> D.H. Meadows, et.al., *Los Límites del Crecimiento* (México: FCE, 1972).

the basis of natural resource requirements and recycling and diluting production and consumption of this expansion on resources and the global environment. Although the environmental crisis is manifested as a limit on growth, it is not an absolute limit on growth, but a limit that is becoming increasingly global (ecological imbalance, crisis, poverty, etc.) with transnational and cross-border impacts. This invites us to question the concept of scarcity within the framework of new strategies of capital (technical innovation, expansion, and environmental protection).

At the same time, these limits should be redefined in terms of different strategies of resource use. Proposals for a halt to growth were widely rejected because these were seen as a threat to the right to develop. It was in this context that the principles were put forth as an alternative, not to halt development, which would be responsible for sustainable development, which would preserve natural resources for future generations. This productive paradigm was considered, one that would develop productive forces by transferring principles and development of the forces of production.

#### 5. Natural Processes and the General Conditions of Production

The general conditions of production, understood as the process that exists in nature and society that is not produced, is the process of value formation and the laws of the reproduction of capital. This establishes the necessary conditions for capital accumulation. These also be redefined in the current context of sustainable reproduction. In this sense, it is not only ecological rationality that needs to be added to the economic policies of development, but also those which develop productive areas, provide services, and those activities considered to be of strategic importance.

<sup>13</sup> J. O'Connor, "Capitalism, Nature, Socialism: A Theoretical Critique" (1988).

<sup>14</sup> I. Sachs, *Ecodesarrollo: Desarrollo sin Destrucción* (México, 1982).

<sup>15</sup> Leff, *Ecología y Capital*, op. cit.

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ifference, but also with respect to the  
ture of political and class interests in the  
able and lasting productive process.

al exchange between environmentalism and  
possibilities for a critical analysis of the  
ciety and nature — and between the economy  
an eco-Marxist theory of production.

#### and Ecological Limits of Production

ure as a limit or norm for production brings us  
on growth under current conditions of capital  
gical change.<sup>12</sup> It also leads us to analyze, on

<sup>12</sup> *Límites del Crecimiento* (México: FCE, 1972).

the basis of natural resource requirements and the possibilities for  
recycling and diluting production and consumption waste, the impact  
of this expansion on resources and the global ecological equilibrium.  
Although the environmental crisis is manifested generally in local  
impacts and not as an absolute limit on growth,<sup>13</sup> this crisis is  
becoming increasingly global (ecological imbalance, food and nutrition  
crisis, poverty, etc.) with transnational and cross-class effects. This  
invites us to question the concept of scarcity within the framework of  
new strategies of capital (technical innovation, new products, market  
expansion, and environmental protection).

At the same time, these limits should be reconsidered in the light  
of different strategies of resource use. Proposals for zero economic  
growth were widely rejected because these were not viable alternatives  
to halt capital accumulation, and also because Third World countries  
have the right to develop. It was in this context that environmental  
principles were put forth as an alternative, non-destructive road to  
development, which would be responsible for social equity today and  
would preserve natural resources for future generations.<sup>14</sup> Another  
productive paradigm was considered, one that alters the limits of the  
development of productive forces by transforming the premises,  
principles and development of the forces of production.<sup>15</sup>

#### 5. Natural Processes and the General Conditions of Production

The general conditions of production, understood as everything  
that exists in nature and society that is not produced according to the  
process of value formation and the laws of the market but rather which  
establishes the necessary conditions for capitalist production, should  
also be redefined in the current context of widened capital  
reproduction. In this sense, it is not only ecological conservation that  
needs to be added to the economic policies of the state — policies  
which develop productive areas, provide services, and supervise all  
those activities considered to be of strategic value for the state and

<sup>13</sup> J. O'Connor, "Capitalism, Nature, Socialism: A Theoretical Introduction," *CNS*, 1, 1988.

<sup>14</sup> I. Sachs, *Ecodesarrollo: Desarrollo sin Destrucción* (México: El Colegio de México, 1982).

<sup>15</sup> Leff, *Ecología y Capital*, *op. cit.*

which are unviable for capital (infrastructure and public services; basic foodstuffs and health services). Traditional public sectors are being challenged by neoliberal economics and by really existing capitalism through privatization policies that are transforming the conditions of production throughout the North and the South, East, and West.

What needs to be elaborated are those conditions for production that are most difficult for capital to generate and regenerate, those processes which are excluded from economic rationality due to their inability to be quantified in the short-run and also because they cannot be valued in capital terms — the natural base and the ecological supply of resources; conservation conditions and the regeneration of natural resources; environmental services and common goods; health conditions, environmental quality, and the quality of life; long-term ecological processes and their global and transgenerational effects; and people's natural and cultural patrimony. The environmental conditions of production would include all these processes that cannot be absorbed under the concept of natural capital.

We thus need to work out a theory of those social and natural processes that intervene to provide the *ecological conditions of production*: on the one hand, the state, by establishing a system of protected areas and a normative juridical system regarding the ecological order of productive processes, spacial distribution of productive processes, industrial and domestic waste management, and so on; on the other hand, civil society and communities, through a series of productive and consumer practices that are non-polluting, many of them located outside the realm of capital and the market. Self-managing environmental units of production would supply basic needs to communities and (as a result of environmental conservation) contribute to the maintenance of the general conditions of the production of capital, the productive conservation of resources, present and future social equality, and sustainable and lasting development.

#### 6. Environmental Externalities and Ecological Costs of Production

Ecological destruction, the over-exploitation of natural resources, and environmental decay have been the effect of the capital accumulation process. Environmental resources are a condition of production that also appear at present as a cost for the widened

reproduction of capital. Nevertheless, these ecological conditions continue to be externalized to the environment. Natural capital have combined in this process. On the one hand, the place a value on nature favors the overuse of natural resources which enter into the production of capital. On the other hand, realization crises and innovation generate processes of destructive production and accelerating the extraction of non-renewable resources imposing productive patterns that are aimed at maximizing profits without taking into consideration the regeneration of natural resources.<sup>16</sup> This clear deterioration of the environment and the quality of

Capital's externalities thus become new problems that are mobilized by political pressure and are not subject to the economic mechanism of price formation. The internalization of socio-environmental externalities and the introduction of necessary ecological costs has been necessary to maintain capital earnings. Thus, the neoclassical economics has introduced the concept of "natural capital," which includes the environment within the realm of capital. The task is to give, given the codependence, incommensurability and irreducibility of the environment and the economy.<sup>17</sup> There are limits to the state's ability to translate nature into market values, especially of ecological processes such as the regeneration and recovery of ecosystems in the face of capital accumulation, as nature's capacity and potential to contribute to social values. Labor value, as a concept that binds together the social and the capital cycles, cannot be easily triplicated to internalize the natural processes that contribute to social values and exchange values. Nature cannot be reduced to discrete and homogeneous value units, like labor value, and it assimilates the multiple natural cycles to capital value.

Therefore, it is not enough to regard natural capital as calculated in terms of natural capital. We need a

<sup>16</sup> *Ibid.*

<sup>17</sup> M. O'Connor, "Codependency and Indeterminacy: A Critique of Production," *CNS*, 3, 1989.

capital (infrastructure and public services; basic services). Traditional public sectors are being altered by economic and by really existing capitalism policies that are transforming the conditions of the North and the South, East, and West.

elaborated are those conditions for production for capital to generate and regenerate, those excluded from economic rationality due to their position in the short-run and also because they cannot be absorbed — the natural base and the ecological supply conditions and the regeneration of natural resources; health and the quality of life; long-term effects; and their global and transgenerational effects; and cultural patrimony. The environmental conditions include all these processes that cannot be absorbed by natural capital.

work out a theory of those social and natural conditions to provide the *ecological conditions* of production. On the one hand, the state, by establishing a system of a normative juridical system regarding the productive processes, spacial distribution of industrial and domestic waste management, and the role of civil society and communities, through a set of consumer practices that are non-polluting, outside the realm of capital and the market. Environmental units of production would supply basic needs (as a result of environmental conservation) and maintenance of the general conditions of the environment. The productive conservation of resources, present and future, and sustainable and lasting development.

#### Environmental Externalities and Ecological Costs of Production

tion, the over-exploitation of natural resources, and they may have been the effect of the capital accumulation. Environmental resources are a condition of production that appear at present as a cost for the widened

reproduction of capital. Nevertheless, these ecological and social costs continue to be externalized to the environment. Two moments of capital have combined in this process. On the one hand, the failure to place a value on nature favors the overuse of resources; also, the widened accumulation of capital generates expanded demand for natural resources which enter into the productive consumption of capital. On the other hand, realization crises and technological innovation generate processes of destructive production, multiplying and accelerating the extraction of non-renewable resources and imposing productive patterns that are aimed at maximizing short-term profits without taking into consideration the conservation and regeneration of natural resources.<sup>16</sup> This clearly leads to further deterioration of the environment and the quality of life.

Capital's externalities thus become new production costs. These are mobilized by political pressure and are not established by any economic mechanism of price formation. In response, the internalization of socio-environmental externalities and the introduction of necessary ecological costs has been proposed in order to maintain capital earnings. Thus, the neoclassical approach proposes the concept of "natural capital," which includes nature and the environment within the realm of capital. The task is not an easy one given the codependence, incommensurability and externality of the environment and the economy.<sup>17</sup> There are limits on capital's (and the state's) ability to translate nature into market (or planning) prices, especially of ecological processes such as the resilience, regeneration and recovery of ecosystems in the face of capital intervention, as well as nature's capacity and potential to contribute to the production of use values. Labor value, as a concept that binds together the labor process and the capital cycles, cannot be easily tripolarized in order to internalize the natural processes that contribute to the production of use values and exchange values. Nature cannot be disaggregated into discrete and homogeneous value units, like labor versus capital, nor can it assimilate the multiple natural cycles to capital cycles.

Therefore, it is not enough to regard nature as a cost that is calculated in terms of natural capital. We need a political economy of

<sup>16</sup> *Ibid.*

<sup>17</sup> M. O'Connor, "Codependency and Indeterminacy: A Critique of the Theory of Production," *CNS*, 3, 1989.

the environment that is critical, in order to see poverty, unemployment and the destruction of natural resources as effects of given relations of production. But we also need a *positive theory of production*, which can give support to a new productive rationality in which natural forces along with labor power assist in the development of productive forces and contribute to the production and distribution of wealth, social equality, ethnic diversity, ecological balance — and to a sustainable supply of natural resources.

### 7. Differentiated Environmental Effects and Ecological Costs of Uneven and Combined Development

There has been a rich discussion about the impact of capital on different environments and socioeconomic formations. In contrast to the ideological discourse on global environmental problems and humanity's common responsibility, theoretical and case studies within the field of uneven development emphasize the difference between the environmental problems of rich and poor countries, as well as the uneven distribution of the environmental costs among nations, regions and social classes generated by the uneven exchange between the North and the South, leading to over-extraction of resources and the transfer of destructive and polluting processes to tropical countries.

This allows us to see the combined effects of environmental degradation and social polarization, as in the case of the decline in soil fertility and resources owing to deforestation, erosion, salinization and desertification caused by the introduction of inappropriate technical models (e.g., capital-intensive agriculture, monoculture, and cattle-raising in tropical regions) and their impact on poverty and malnutrition. Another example would be urban-industrial concentration, rural-urban separation and regional migration, all of which can cause serious environmental problems.<sup>18</sup> The occupation of space and the appraisal of resources that result from uneven development have brought about the over-exploitation and under-utilization of environmental resources, and a failure to take advantage of the environmental potential for ecologically sustainable

<sup>18</sup> D. Faber, "Dependent Development, Disarticulated Accumulation and Ecological Crisis in Central America," *CNS*, 1, 1988; J. O'Connor, "Combined and Uneven Development and Ecological Crisis: A Theoretical Introduction," *op. cit.*

development.

The negative effects of uneven and c should be counteracted by an alternative mode of combining multiple strategies of sustainable dev exploring possible complementarities between the growth of self-sufficient environmental econ

### 8. The Emergence of Political Ecology and Ecological Marxism

Political ecology and ecological Marxism and thought that began outside historical materialism borrowed Marxism's principles of social criticism. An ecological analysis of current environmental problems, establishing a clearly constituted theoretical discipline, they seek the causes, roots and processes of ecological imbalance and decay. They suggest principles for the ecological and energy production. In this way, a new energy economic rationality that provides a critical theory of the energy development economic rationality.<sup>20</sup> In addition, new anthropology analyze the rationality of traditional societies in energy flows.<sup>21</sup> At the same time, the emerging field of ecological economics establishes both global conditions for all ecological bases for subsistence microeconomic contributions cannot replace political economy of social production, in which one must incorporate energy bases, conditions, and potentials for an and lasting production process.

Within this tendency, an eco-Marxist thermodynamic theory of open systems has been in opposition to the unified, uniform and quantitative

<sup>19</sup> E. Leff, "Cultura Ecológica y Racionalidad Ambiental," in E. Leff and G. Maihold, eds., *Hacia una Cultura Ecológica* (México: CCY, 1987).

<sup>20</sup> N. Georgescu-Roegen, *The Entropy Law and the Economic Process* (Harvard University Press, 1971).

<sup>21</sup> R.A. Rappoport, "The Flow of Energy in an Agricultural System," *American Journal of Agricultural Economics*, 25, 1971.

critical, in order to see poverty, unemployment and natural resources as effects of given relations of production. We need a *positive theory of production*, which involves productive rationality in which natural forces assist in the development of productive forces and the production and distribution of wealth, social justice, ecological balance — and to a sustainable development.

#### Disarticulated Environmental Effects and of Uneven and Combined Development

A rich discussion about the impact of capital on the environment and socioeconomic formations. In contrast to the discourse on global environmental problems and responsibility, theoretical and case studies within development emphasize the difference between the effects of rich and poor countries, as well as the distribution of environmental costs among nations, regions and social classes created by the uneven exchange between the industrialized leading to over-extraction of resources and the industrial and polluting processes to tropical countries.

To see the combined effects of environmental polarization, as in the case of the decline in soil fertility leading to deforestation, erosion, salinization and the introduction of inappropriate technical solutions (intensive agriculture, monoculture, and cattle-ranching regions) and their impact on poverty and social justice. An example would be urban-industrial development and regional migration, all of which contribute to environmental problems.<sup>18</sup> The occupation and depletion of resources that result from uneven development, the fight about the over-exploitation and under-allocation of resources, and a failure to take advantage of the ecological potential for ecologically sustainable

Development, Disarticulated Accumulation and Ecological Crisis, 1, 1988; J. O'Connor, "Combined and Uneven Development: A Theoretical Introduction," *op. cit.*

development.

The negative effects of uneven and combined development should be counteracted by an alternative mode of production capable of combining multiple strategies of sustainable development, and even of exploring possible complementarities between market rationality and the growth of self-sufficient environmental economies.<sup>19</sup>

#### 8. The Emergence of Political Ecology and Ecological Marxism

Political ecology and ecological Marxism are new areas of action and thought that began outside historical materialism, although they borrowed Marxism's principles of social criticism to apply to a non-ecological analysis of current environmental problems. Without establishing a clearly constituted theoretical paradigm or scientific discipline, they seek the causes, roots and social effects of the processes of ecological imbalance and decay. At the same time, they suggest principles for the ecological and energetic reordering of production. In this way, a new energy economics has been constituted that provides a critical theory of the energy degradation produced by economic rationality.<sup>20</sup> In addition, new anthropological approaches analyze the rationality of traditional societies in terms of their energy flows.<sup>21</sup> At the same time, the emerging field of ecological economics establishes both global conditions for all economies as well as the ecological bases for subsistence microeconomies. However, these contributions cannot replace political economy as a specific field of social production, in which one must incorporate the ecological and energy bases, conditions, and potentials for an equitable, sustainable and lasting production process.

Within this tendency, an eco-Marxism inspired by the thermodynamic theory of open systems has also appeared. In opposition to the unified, uniform and quantitative modern rationality,

<sup>19</sup> E. Leff, "Cultura Ecológica y Racionalidad Ambiental," in M. Aguilar and G. Maihold, eds., *Hacia una Cultura Ecológica* (México: CCYDEL/DDF/F. Ebert, 1990).

<sup>20</sup> N. Georgescu-Roegen, *The Entropy Law and the Economic Process* (Cambridge: Harvard University Press, 1971).

<sup>21</sup> R.A. Rappoport, "The Flow of Energy in an Agricultural Society," *Scientific American*, 25, 1971.

based on the predictability, normative character and control of natural, cultural and social processes, eco-Marxism posits concepts of opening, diversity, indeterminacy, coevolution, codependence and dispersion.<sup>22</sup>

There are thus several ways of enriching Marxism in order to develop a critical analysis of production through the consideration of environmental issues. Along with those noted above, I mention three more, which I believe to be fundamental:

First, the constitution of socio-environmental formations as units of production: Marxism offers a holistic vision of the relationship between society and nature based on social rather than biological overdetermination and the centrality of production and social reproduction. From an environmental perspective, the objective is to incorporate ecological bases and conditions into the capitalist production process and then analyze the articulation with environmental units of production, that is, with all socioeconomic formations that are not strictly capitalist. In its most general form, these virtual economic-environmental formations can be included within a broad typology of social formations depending upon different forms of land ownership, social access to resources, property in the means of production, and the market exchange of products and inputs.<sup>23</sup> Nevertheless, these typologies do not take into account different links with nature, i.e., appraisal of natural resources, environmental services, and ecological potentials in the productive process. Environmental management thus poses the problem of articulating various self-sufficient economies and environmental units with the market and with different ethnic styles of resource use.<sup>24</sup>

Second, a social analysis of the global nature of, and interconnection among, socio-environmental processes: Marxism is a social theory, based upon the material nature of the social relations of production, which establishes the relations of determination, causality and conditioning with a series of natural and social processes. It is a theory (the first one, still valid today) that denaturalizes and

<sup>22</sup> M. O'Connor, *op. cit.*; J. Martínez Alier, *Ecological Economics* (Oxford: Basil Blackwell, 1987); J. Martínez Alier, "Ecological Economics and Eco-Socialism," *CNS*, 2, 1989.

<sup>23</sup> R. Fossaert, *La Société. Les Structures Economiques* (Paris: Editions du Seuil, 1972).

<sup>24</sup> Leff, "Cultura Ecológica y Racionalidad Ambiental," *op. cit.*

desubjectivizes social processes.<sup>25</sup> In this sense, naturalist, biological, and energy-centered approaches, methodological individualism, which analyze the society and nature from the point of view of biology, and from the ecological perspective of the carrying capacity of population in different ecosystems. Placing the relationship within the social relations of production, the question of the environment, which appears as a polyvalent object that permits the transformation of economic rationality and the construction of a new social order based upon the articulation of natural, technical and social processes.<sup>26</sup>

Eco-Marxism thus allows us to think about the manner of physical constructivism, generalizing systems theory.<sup>27</sup> Rather it moves from an analysis of the whole based on the capital/labor relationship to an analysis of socio-environmental systems and economic production relations and labor processes that integrate ecological productivity and technological progress. It is linked to the development of the forces of production beyond systemic approaches that try to incorporate the economic system, through planning practices, coevolutionary processes between the economy and the environment.<sup>29</sup>

<sup>25</sup> L. Althusser and E. Balibar, *Lire le Capital* (Paris: Editions du Seuil, 1968); Althusser, "Idéologie et Appareils Idéologiques d'Etat," *Le Capital*, reprinted in *Posiciones*, (México: Ed. Grijalbo, 1977).

<sup>26</sup> Leff, "Sobre la Relaciones Sociedad-Naturaleza en el Desarrollo," in E. Leff, "Ambiente y Articulación de Ciencias," in E. Leff, *Conocimiento y la Perspectiva Ambiental del Desarrollo* (1986).

<sup>27</sup> E. Morin, *La Méthode: La Nature de la Nature* (Paris: Editions du Seuil, 1980).

<sup>28</sup> "As policies are available to the [economic] system, the success of such policies will be based upon...the disappearance of the environment, which will end up being assimilated into the system, the environment, assimilated as a permanent dimension, will disappear as a concrete field of action." Sachs, *op. cit.*

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desubjectivizes social processes.<sup>25</sup> In this sense, Marxism opposes naturalist, biological, and energy-centered approaches, as well as methodological individualism, which analyze the relationship between society and nature from the point of view of biological evolution, or from the ecological perspective of the carrying capacity of growing population in different ecosystems. Placing the society-nature relationship within the social relations of production politicizes the question of the environment, which appears as a complex and polyvalent object that permits the transformation of the dominant economic rationality and the construction of a productive rationality based upon the articulation of natural, technological and social processes.<sup>26</sup>

Eco-Marxism thus allows us to think about complexity, but not in the manner of physical constructivism, generalized ecology or general systems theory.<sup>27</sup> Rather it moves from an analysis of the complex whole based on the capital/labor relationship to the study of complex socio-environmental systems and economic paradigms based on production relations and labor processes that integrate cultural values, ecological productivity and technological progress as processes that are linked to the development of the forces of production. One must go beyond systemic approaches that try to incorporate the environment to the economic system, through planning practices,<sup>28</sup> in order to study coevolutionary processes between the economy and geo-environmental systems.<sup>29</sup>

<sup>25</sup> L. Althusser and E. Balibar, *Lire le Capital* (Paris: F. Maspero, 1966); L. Althusser, "Idéologie et Appareils Idéologiques d'Etat," *La Pensée*, 151, Paris, 1970, reprinted in *Posiciones*, (México: Ed. Grijalbo, 1977).

<sup>26</sup> Leff, "Sobre la Relaciones Sociedad-Naturaleza en el Materialismo Histórico," *op. cit.*; E. Leff, "Ambiente y Articulación de Ciencias," in E. Leff, ed., *Los Problemas del Conocimiento y la Perspectiva Ambiental del Desarrollo* (México: Siglo XXI Eds., 1986).

<sup>27</sup> E. Morin, *La Méthode: La Nature de la Nature* (Paris: Editions Anthropos, 1977); *La Méthode: La Vie de la Vie* (Paris: Editions du Seuil, 1980).

<sup>28</sup> "As policies are available to the [economic] system, the environment gets narrower. The success of such policies will be based upon...the disappearance of the concept of environment, which will end up being assimilated into the system...In fact, in the long run, the environment, assimilated as a permanent dimension of planning, is destined to disappear as a concrete field of action." Sachs, *op. cit.*

<sup>29</sup> M. O'Connor, *op. cit.*

The environment should not be subsumed under the capitalization of nature nor maintained as a system external to the economic sphere, but rather be integrated into production, not only as a production condition but also as a productive force. The environment should be regarded as the articulation of cultural, ecological, technological, and economic processes that come together to generate a complex, balanced, and sustained productive system open to a variety of options and development styles.

Marxist theory is able to analyze the relations between productive overdetermination and a variety of processes (political, juridical, natural) based on the fundamental opposition between capital and labor. From an environmental perspective, the social relations of production are made more complex, lying between capital, labor, and natural processes. The durability of the productive process is no longer established through programs of economic recovery and market expansion. Rather, it stems from a dialectic in which the ecological conditions for the renovation and productivity of natural resources, global ecological balance, territorial distribution of productive activities, and the participatory management of resources are fundamental for attaining a sustained and equitable development.

In this way, the environment is seen as a complex system that articulates natural, technological, and cultural processes within the social forces of production, and which is interlinked with new social relations of production — relations between civil society, state, and nature and between communities and their environment as means of labor and production for the participatory management of their natural resources.<sup>30</sup>

Third, a change of productive paradigm that includes nature and culture as productive forces: Returning to the questions that we raised earlier, we propose an alternative productive paradigm to that of the dominant economic rationality, one in which production would not primarily depend on the development of productive forces and technological progress propelled by the logic of the market and profit maximization but on an increase in the production of use value to satisfy socially and culturally defined necessities, based on the socialization of access to nature, the decentralization and ecological planning of productive activities, and the management of people's and

<sup>30</sup> Leff, "Cultura Ecológica y Racionalidad Ambiental," *op. cit.*

communities' environmental resources. This productive rationality stems from the ecological global economy and especially from the development of microeconomies.<sup>31</sup> In this paradigm, nature and mediating processes but act as social labor and direct production. In this sense, we are proposing an ecotechnology that is integrated, sustainable and lasting management based upon three articulated levels of productivity: the first level of ecological productivity, derived from the natural (ecosystemic organization, photosynthetic production) which generates a system of natural resources with a great supply of natural use values. The second is the level of ecological productivity, in which the diversity of cultural or social identities is converted into a productive and socially recuperates and improves their traditional productive processes, sustainably productive, as well as incorporating the knowledge of local communities can manage their own environment. The third is the level of technological productivity which is a complex and polyvalent technological system capable of producing multiple levels without destroying the bases for ecological and cultural diversity.

#### 9. Economic Rationality and Environment From the Perspective of Sustainable Development

The environmental issue has presented a series of problems that are neither perceptible nor resolvable within the current paradigms. From the perspective of sustainable development, one can clearly see the ecological irrationality of economic growth, fueled by the market for profits and short-term economic surplus, which has led to the economic system's negative environmental impact. Environmentalism poses ethical, political, and practical challenges in the construction of new development styles: decentralization, ecological productivity and political participation.

<sup>31</sup> "Human Scale Development," Development Dialogue, Hammerskjöld Foundation, Motala, 1989.

<sup>32</sup> Leff, *Ecología y Capital*, *op. cit.*; Leff, "Ecotechnology and Sustainable Development."

<sup>33</sup> Alier, *Ecological Economics*, *op. cit.*

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mediating processes but act as social labor and direct productive forces.  
In this sense, we are proposing an ecotechnological paradigm for the  
integrated, sustainable and lasting management of natural resources,  
based upon three articulated levels of productivity.<sup>32</sup> The first is the  
level of ecological productivity, derived from nature's potential  
(ecosystemic organization, photosynthetic process, etc.) which  
generates a system of natural resources with a growing and sustainable  
supply of natural use values. The second is the level of cultural  
productivity, in which the diversity of cultural organizations and ethnic  
identities is converted into a productive and social force, and which  
recuperates and improves their traditional practices to become  
sustainably productive, as well as incorporating technologies so that  
communities can manage their own environmental resources. The third  
is the level of technological productivity which is based on a complex  
and polyvalent technological system capable of driving the previous  
levels without destroying the bases for ecological sustainability and  
cultural diversity.

#### 9. Economic Rationality and Environmental Rationality From the Perspective of Sustainable Development

The environmental issue has presented economics with new  
problems that are neither perceptible nor resolvable through traditional  
paradigms. From the perspective of sustainable and lasting  
development, one can clearly see the ecological and energetic  
irrationality of economic growth, fueled by the maximization of private  
profits and short-term economic surplus, which, in turn, generate the  
economic system's negative environmental externalities.<sup>33</sup>  
Environmentalism poses ethical, political, and productive solutions for  
the construction of new development styles based on economic  
decentralization, ecological productivity and political pluralism.<sup>34</sup>

<sup>31</sup> "Human Scale Development," *Development Dialogue*, 1, CEP/AUR/Dag  
Hammar-skjold Foundation, Motala, 1989.

<sup>32</sup> Leff, *Ecología y Capital*, *op. cit.*; Leff, "Ecotechnological Productivity," *op. cit.*

<sup>33</sup> Alier, *Ecological Economics*, *op. cit.*

As opposed to the normalization of productive patterns and the homogeneity of lifestyles under the unifying logic of the market, environmentalism proposes an alternative based on the ecological diversity of nature and the cultural diversity of peoples. This means it is impossible to compare the one-dimensional neoliberal model with a totalizing socio-environmentally defined rationality. The multiplicity of development styles possible within an environmental rationality is the result of diverse ecological conditions of time and space, but more importantly, of the actions of "ecological interests" which mobilize a wide range of political actors and social groups in the reorganization of productive rationality.<sup>35</sup>

Capitalist economy lacks instruments with which to appraise the contribution of ecological and natural processes with respect to the production of natural use values and products. Economic calculation is unable to place a value on long-term ecological and social processes.<sup>36</sup> Despite efforts to create a concept of natural capital that can internalize environmental externalities within economic calculations, the market economy is unable to demonstrate rational criteria for the investment of limited resources.<sup>37</sup> The problem is intensified by the uncertainty of technological changes (insofar as their effect on opportunity costs are concerned), the viability of using different potential resources, the rhythms of substitution of the resources (the incorporation of natural wealth into production and market circuits), and impacts on local and global environments.

Many of the values and qualitative goals of environmentalism (conservation, ecological potential, political pluralism, ethnic diversity, aesthetic values, direct and participatory democracy, and quality of life) are incommensurable; they cannot be reduced to a common measure. William Kapp warned that the comparative evaluation of economic, energy and environmental rationality requires essentially heterogeneous units of measurement, for which there is no common denominator.<sup>38</sup> Environmentally sustainable development requires new

<sup>34</sup> Sachs, *op. cit.*; Leff, *Ecología y Capital*, *op. cit.*; Leff, "Ecotechnological Productivity," *op. cit.*

<sup>35</sup> A. Demirovic, "Ecological Crisis and the Future of Democracy," *CNS*, 2, 1989.

<sup>36</sup> P. Gutman, "Economía y Ambiente," in Leff, ed., *Los Problemas del Conocimiento*, *op. cit.*; Leff, *Ecología y Capital*, *op. cit.*

<sup>37</sup> Alier, "Ecological Economics and Eco-Socialism," *op. cit.*

<sup>38</sup> W. Kapp, *Social Costs, Economic Development and Environmental Disruption*

analytical concepts and instruments to evaluate natural resources, eco-technological productivity, subsistence economies aimed at the sustainable use of use values and market commodities.

We are then presented with the articulation of environmental management (not oriented to the production of value nor subject to market laws of a capitalist economy. Two different rationalities are at play. Not only the preferences of future consumers contrast with various "ecological interests" and rationalities of producers, with alternative strategies for the appropriation, transformation and usufruct of environmental resources situated in an economic and political field of complementarity and negotiation but not free from socio-political struggles.<sup>39</sup> This is a field that is still in theory.

#### 10. Political Conditions for Sustainable Development: The Environmental

The crises of socialism and the environmental movements are oriented toward democracy based ways of thinking about transforming the world; they reject the idea of a historic transformation of the working class, aiming at the collapse of capitalism by revolutionary means) and the construction of social constructs that permit sustainable, lasting, and equitable development. This challenge not only economic rationality but also political pluralism and the participation of all in the management of its productive and vital processes.

The aim of such a transformation is no longer the accumulation of the means of production, which ensures the development of the forces of production and the creation of wealth, but, additionally, the conservation and strengthening of the resource base for sustainable development, in

(Lanham, Maryland: University Press of America, 1983).

<sup>39</sup> Leff, "Cultura Ecológica y Racionalidad Ambiental," *op. cit.*

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les under the unifying logic of the market,  
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s, *Economic Development and Environmental Disruption*

analytical concepts and instruments to evaluate the patrimony of  
natural resources, eco-technological productivity, and self-managed  
subsistence economies aimed at the sustainable and lasting production  
of use values and market commodities.

We are then presented with the articulation of new spaces of  
environmental management (not oriented directly toward the  
production of value nor subject to market laws) with an expanding  
capitalist economy. Two different rationalities confront one another.  
Not only the preferences of future consumers come into play; so do the  
various "ecological interests" and rationalities of current consumers  
and producers, with alternative strategies for property, possession,  
appropriation, transformation and usufruct of environmental resources,  
situated in an economic and political field that is open to  
complementarity and negotiation but not free from contradictions and  
socio-political struggles.<sup>39</sup> This is a field that is open to eco-Marxist  
theory.

#### 10. Political Conditions for Sustainable Development: The Environmental Movement

The crises of socialism and the environment have opened up new  
ways of thinking about transforming the world. The new social  
movements are oriented toward democracy based on an environmental  
culture; they reject the idea of a historic transformation led only by the  
working class, aiming at the collapse of capitalism (peacefully or by  
revolutionary means) and the construction of socialism. The aim is to  
construct new styles of development and new models of civilization  
that permit sustainable, lasting, and equitable development, and  
challenge not only economic rationality but also bureaucracies, in ways  
that encourage political pluralism and the participation by civil society  
in the management of its productive and vital processes.

The aim of such a transformation is no longer just the ownership  
of the means of production, which ensures a more accelerated  
development of the forces of production and a better distribution of  
wealth, but, additionally, the conservation and enhancement of the  
resource base for sustainable development, i.e., the conditions of

(Lanham, Maryland: University Press of America, 1983).

<sup>39</sup> Leff, "Cultura Ecológica y Racionalidad Ambiental," op. cit.

existence and labor, distribution of earnings, and the improvement of the quality of life and the environment through a radical critique of needs. It is a question of conserving common goods, of recovering the environment as productive potential, as a means of production and a means for life. New struggles are thus being waged around ways of appropriating and socializing nature.

Environmental thought can be inscribed within post-Marxist or postmodernist thought. It defends the specificity of local action (thinking globally, acting locally), the autonomy of social groups, and difference — difference in cultural values, and development styles, and options. It presents new ethical values and a new political culture, but at the same time poses the problem of political efficacy and of the real political power held by environmental groups. Although the defense of autonomy and local difference can be seen as part of the struggle against totalitarianism (against vertical and corporative power structures in traditional political organizations), it also rules out any universal demand other than one claiming the legitimacy of all local demands. Nevertheless, the demand for autonomous spaces as a starting point for the development of alternative local productive projects is part of the larger movement for another kind of material existence based on the integration of multiple development styles. This demand for plurality goes beyond the democratization of the state through political representation, which in many cases is creating new forms of authoritarian regimes imposing a unidimensional neoliberal rationality on the people.<sup>40</sup>

The environmental movement, driven by the principles of participatory management, the rights of ethnic groups and peasant communities over their territory, and the reappraisal of aesthetic values in nature, is generating new forms of participation in the social process of production and the socialization of the environment as production conditions.

In contrast to orthodox Marxism's concept of a class (the proletariat) as the protagonist of social change, the environmental movement presents itself as an explosion of interests and identities that rejects a unitary class response to capitalism as a mode of production. Nevertheless, this movement must still redefine a socialist project that

<sup>40</sup> Leff, "Cultura Democrática, Gestión Ambiental y Desarrollo Sostenido en América Latina," *op. cit.*

can integrate its particular differences into a strategy of social labor, one that can respond to "post-Marxist" demands. They themselves have been unable to find unity in their diverse identities.

Unified objectives are clearly fundamental to the construction of alliances that allow for a strong environmental power. The question is whether the unity/force of the movement can be based on the unity of labor in its dialectical relationship with capital or whether the dynamic is more complex, meaning that environmentalism would be the conjunction of different social identities within common aims — not the collapse of these identities in the construction of really existing socialism, but, instead, the construction of a new *environmental social rationality* that allows for life and sustainable development.

In this sense, "the challenge of specificity is to create new social actors.... It is the result of the implementation of policies...implemented by capital and the state. On the one hand, people at the same time as production conditions. On the other hand, one hand, this specificity (difference) represents a challenge to class and class solidarity. On the other hand, it reveals a need for social solidarity and a universal network of social citizenship."<sup>41</sup>

Clearly, "questions relative to the conditions of class, although they may be more complex, are not class."<sup>42</sup> This means that, despite the multi-faceted nature of the environmental movement, demands for the ownership of the means of production, and the democratization of decision-making powers and the improved quality of life for all peoples, are all linked to prior struggles of the proletariat and urban middle-class struggles. The movement does not see itself as an anti-capitalist struggle in the name of socialism but rather as a fight against the hegemony of the dominant economic rationality and in favor of the construction of an environmental rationality and democratization of the social process that includes new strategies of social

<sup>41</sup> C. Carboni, communication to J. O'Connor, 1988.

<sup>42</sup> J. O'Connor, "Capitalism, Nature, Socialism: A Theoretical Inquiry," *op. cit.*

distribution of earnings, and the improvement of the environment through a radical critique of the conserving common goods, of recovering the productive potential, as a means of production and struggles are thus being waged around ways of alizing nature.

thought can be inscribed within post-Marxist or t. It defends the specificity of local action (ing locally), the autonomy of social groups, and e in cultural values, and development styles, and w ethical values and a new political culture, but the problem of political efficacy and of the real / environmental groups. Although the defense of difference can be seen as part of the struggle 1 (against vertical and corporative power il political organizations), it also rules out any r than one claiming the legitimacy of all local ss, the demand for autonomous spaces as a development of alternative local productive larger movement for another kind of material integration of multiple development styles. This goes beyond the democratization of the state sentation, which in many cases is creating new regimes imposing a unidimensional neoliberal e.<sup>40</sup>

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tica, Gestión Ambiental y Desarrollo Sostenido en América

can integrate its particular differences into a strategy based on common social labor, one that can respond to "post-Marxist" positions, which themselves have been unable to find unity in fragmented social identities.

Unified objectives are clearly fundamental in order to build alliances that allow for a strong environmental movement with real power. The question is whether the unity/force of the movement should be based on the unity of labor in its dialectical relationship with capital; or whether the dynamic is more complex, meaning that the objective of environmentalism would be the conjunction of different interests and identities within common aims — not the collapse of capitalism for the construction of really existing socialism, but, instead, the construction of a new *environmental social rationality* that allows diverse styles of life and sustainable development.

In this sense, "the challenge of specificity is accepted by all the new social actors.... It is the result of the complex network of policies...implemented by capital and the state in order to integrate people at the same time as production conditions are changed. On the one hand, this specificity (difference) represents a break with collective and class solidarity. On the other hand, it reveals new micro-networks of social solidarity and a universal network of solidarity based on social citizenship."<sup>41</sup>

Clearly, "questions relative to the conditions of production are questions of class, although they may be more than questions of class."<sup>42</sup> This means that, despite the multi-class nature of the environmental movement, demands for the ownership of land and the means of production, and the democratization of the state, and for decision-making powers and the improved quality of life and living conditions for all peoples, are all linked to prior indigenous, peasant, proletarian and urban middle-class struggles. Environmentalism does not see itself as an anti-capitalist struggle in favor of "traditional" socialism but rather as a fight against the hegemonic power of the dominant economic rationality and in favor of the construction of an environmental rationality and democratization of the productive process that includes new strategies of social participation in the

<sup>41</sup> C. Carboni, communication to J. O'Connor, 1988.

<sup>42</sup> J. O'Connor, "Capitalism, Nature, Socialism: A Theoretical Introduction," *op. cit.*

economic and political management of environmental resources.<sup>43</sup>

The environmental movement is a potential social force that can reverse the dominant economic rationality and generate the conditions for the socialization of environmental resources. At the same time, it provides political pressure that can halt destructive ecological processes while furthering environmental norms and consciousness that, in the last analysis, will enable us to appraise resources and environmental services and more closely estimate their price in terms of social costs, so that they are less vulnerable to the capitalization of nature. But the most important aspect of the environmental movement is its orientation toward the construction of a *new productive paradigm* that will establish the social and material bases for an equitable and sustainable development.

The environmental movement arose and multiplied as a result of the environmental crisis and an emerging democratic culture. Nevertheless, it is confronted with a social theory that is more oriented toward the conceptualization of the social conditions of praxis than toward strategic action for social change.<sup>44</sup> Thus, environmentalism has not reflected upon its own practice or its strategy for true social transformation guided by the principles and objectives of environmental rationality. Environmentalism needs a praxis that can break through the paralyzing orthodoxy and open up organizational strategies that transmit and concretize its innovating potential through the opportunities made available by a changing field of power, and thus construct a new social and productive rationality.

<sup>43</sup> E. Leff, "El Movimiento Ambientalista en México y en América Latina," in *Ecología: Política/Cultura*, 2, 6, Noviembre, 1988.

<sup>44</sup> J. Ely and V. Heins, "Interview with Helmut Wiesenhal," *CNS*, 3, 1989.

## A Grecian Jog By Saul Landau

I don't leap from  
bed, rage forth  
to prolong the dawn.  
Instead,  
I obey  
the dreamy  
threads of pogroms,  
infect caffein-driven  
impulses;  
dread,  
the lure  
of newly-strewn headlines.

I tug at lower limbs;  
integrity  
intact, inhale  
diesel flavored breeze;  
counteract demands,  
shrieking, puerile fascists,  
facts in B flat.  
The taunts of  
provocative crows,  
reminders  
of synoptic pleas,

creaky, brittle,  
binding one, two,  
cartilage,  
three, four;  
wind pierces nostrils,  
The Count of Monte Cristo  
leaps, sword in hand,  
finds the maiden;  
a fence,  
a garden hose,  
obligations  
suck scarce oxygen.

I exhale,  
two, three,  
gasp, punji  
slaloms in r  
fungus betw  
half thought  
half nights,  
clothes hung  
lazy lungs,  
on drooping  
of Brothers  
grinding bo

mark time.  
Grandpa,  
imagine if y  
will,  
adventurous  
filling bowls  
the appeal o  
writing a no  
uphill, an ei  
Were there  
posed in the  
of pogroms

A horn  
yells,  
dancing gas  
Bells of St.  
measure mo  
memory-dre  
tell of odys  
drip down  
treadless N  
crush remna  
undigested  
a trace of a