DOES ECOLOGY NEED MARX?

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The relationship between ecology and Marx in the United States is difficult because of the lack of working-class politics and labor parties; the pragmatic, undialectical reception of Marxism among most intellectuals; and the strength of the ideological, political and academic consensus against Marx. This essay is an intervention in the ideological struggle to establish the relevance of Marx for ecology. The author briefly outlines mainstream, ecocentric and ecofeminist perspectives and offers a Marxist critique of their accounts of the causes of ecological problems. The author then proceeds to present some of the elements of Marx's ecology and recent contributions by marxist ecologists, and arguing that an ecology without Marx is, in the last instance, an ecology for the privileged, the author concludes with a call for a red/green dialogue conducive to the development of a movement that seeks the end of the exploitation of both labor and the earth.

Narrowly defined, ecology is a science that examines the complex systemic interactions between the natural environment and nonhuman life forms.[1] Politically, however, ecology today is a generic, multifaceted term that applies to a number of heterogeneous ideologies, theoretical perspectives, and political practices concerned with the relationship between human populations and nature (i.e., with the characteristics of natural ecosystems and the mostly deleterious ways they are changed by the effects of human intervention). Some of the main problems that concern ecologists are the effects of population growth, density and size, environmental pollution, resource depletion, the extinction of plant and animal species and decline in biodiversity, and the effects of environmental degradation on people's health and quality of life. From an ecological standpoint, these and other effects of human activities threaten the sustainability of the earth itself as an ecosystem increasingly out of balance and, consequently, the survival of all life forms, including the human species.

In this article, I intend to present some of the basic assumptions of the dominant ecological perspectives and, from the standpoint of Marxist theory, assess their problematic theoretical and political implications, establishing the grounds for my affirmative response to the question that frames the following analysis. Ecology does need Marx in order to become theoretically adequate to the task of understanding the nature of the phenomena that concern it and politically effective in the struggles toward social and ecological change. I am aware that most environmental activists today would disagree with this conclusion, but this is to be expected in the current political and ideological climate. I am, of course, aware that the merits of this and similar conclusions cannot be established by fiat, but through historical

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processes revealing the capitalist, historically specific barriers to the long-term success of isolated environmental struggles.

ECOLOGY AND MARXISM

The relationship between ecology and Marxism has always been difficult. Marxists tend to argue that despite the considerable differences from Malthus's (1933) views, which characterize some ecological perspectives today, ecology reproduces the logic of his arguments by positing natural (i.e., unsurmountable) limits to the possibility of creating a better society (e.g., see Hardin, 1988, 1995). Whereas Malthus saw an irresolvable conflict between the tendency of the human population to grow exponentially and the inability of food production to grow at the same pace, ecologists today posit a conflict between the world's population size and growth rate, the earth's limited carrying capacity, the need to contain and remedy the environmental and human effects of industrialization, and the unmet needs of the vast majority of the world's population (Daly, 1996; Hardin, 1993; Ornstein & Ehrlich, 1989; Postel, 1994; Tobias, 1988).

Most ecologists, because of the disastrous environmental record of the former Soviet Union and its Eastern European satellites, argue that the key sources of the ecological problems afflicting the world today are industrialization, whether under capitalist or social relations of production, and the utilitarian attitudes and practices toward nature it produces (e.g., Dobson, 1995, pp. 376-377). This and similar arguments tend to blame Marx, and his theoretical and political heritage, for Stalinism and its pursuit of economic growth regardless of human and ecological costs. They ignore the ecological critique of capitalism contained in Marx's work as well as its influence on Kautsky, Lenin, and Bukharin (for an illuminating discussion about Lenin's environmental policies and the ecological views and concerns of these prominent Marxists, as well as other Soviet scholars, see Foster, 1999, pp. 391-395). Furthermore, because Marx and Engels' work is vast, complex, and contradictory, a great deal of the skepticism about its theoretical and political relevance for ecology is likely to rest on undialectical and stereotyped readings and the literal, rather than theoretical, interpretation of isolated quotes.

In light of the heterogeneity of the ecological literature, it is difficult to answer the question of whether ecology needs Marx because there is not one ecology, but many. Furthermore, they are separated by deep differences in their theorizing about nature, the place of human beings in nature, and the causes and the solutions to ecological problems. Browsing the literature, one encounters many kinds of ecologies (e.g., social, radical, political, feminist, deep, shallow, neo-Malthusian, socialist, and even Marxist).[2] For the purposes of this article, I will limit my discussion to the three main non-Marxist tendencies within current ecological thinking: mainstream or anthropocentric, deep ecology or ecocentric, and ecofeminist.

The dominant, mainstream, "anthropocentric" (or shallow, from the standpoint of deep ecologists) approaches to environmental/ecological problems (e.g., Gore, 1993) are concerned with reversing processes of environmental degradation, the basis for economic sustainability, and human survival strategies that take into account the needs to preserve ecological equilibrium while privileging the fulfillment of human needs. Mainstream environmentalism does not challenge the basic premises of capitalism such as the endless pursuit of economic growth and higher levels of material consumption, the belief in the capacity of technology to solve all problems, or the reduction of nature and other life forms to resources to be exploited. Its goals are to ameliorate the ecological effects of the present system

that might interfere with business as usual or might have negative effects on people's health, employment, and lifestyles. Ecological problems are viewed as simply the unanticipated consequences of economic and social activities, which can eventually be solved to the extent people and corporations are induced to change their behavior through mixtures of economic rewards and punishments. Changes in land-use policies, struggles against toxic and radioactive waste dumping, efforts to clean up the air by monitoring automobile emissions, belief in the need to control population growth as a way to decrease environmental degradation, resource depletion, poverty, and other social problems are examples of the kinds of issues that concern mainstream environmentalism. Permeating the understanding of ecological problems among mainstream environmentalists is the neo-Malthusian understanding of population and its social, environmental, economic, and political effects that continues to dominate U.S. culture, media discussions, social science, and policy making about environmental and social problems in the United States and abroad, especially in the Third World.[3]

The alternative ecocentric perspectives, such as deep ecology (e.g., Naess, 1988; Tobias, 1988; Sessions, 1995), demote humans from their privileged position in relationship to the natural environment and other life forms and advocate *biospheric egalitarianism* (Naess, 1995, p. 167), giving equal survival and fulfillment claims to all forms of life. Other important themes of deep ecology are the stress on the intrinsic value of the human and nonhuman worlds; the need to maintain the diversity of all life forms and all of nature's ecosystems to further the well-being of nature as a whole in its human and nonhuman aspects; the need to change substantially the present forms of human intervention in natural processes and ways of thinking to stop the worsening of the ecological disruption and restore the balance of nature; the need to estimate the carrying capacity of the earth as a whole and of the various bioregions where humans are settled as grounds for the need to substantially reduce the size of the human population to give room to nonhuman life forms to flourish; and the need to reduce drastically consumption, waste, and technological developments that destroy the balance of nature and decrease biodiversity (e.g., Devall & Sessions, 1995; Naess, 1995). Ecocentric approaches blame the ecological crisis on the anthropocentrism and thirst for power that they argue characterize most of human history, especially Western industrial societies and their cultural, philosophical, and religious traditions that legitimate the dominance of men over women and nature, and of the rich over the poor. Philosophers and activists within this perspective have, in their rejection of Western ideas, sought support to their claims in a mixture of non-Western cultural, philosophical, and religious traditions, bringing together elements of Native American cultures, Zen Buddhism, mythologies, and Oriental mysticism, and suggesting a holistic, interconnected, ecological, caring, and mystical worldview in opposition to—in their view—the rationalistic, analytic, instrumental, and exploitative worldview typical of Western societies and fostered by industrialization and its use and abuse of nature and people (Devall & Sessions, 1995).

Different from and critical of ecocentric perspectives and politics is *ecofeminism*, which refers to a broad spectrum of feminist trends that combine allegiance to different kinds of feminist theory and politics with environmental concerns (Carlassare, 1994; Plumwood, 1994, 1998, p. 213). Some strands of ecofeminism share the ecocentric turn to elements of non-Western cultures, philosophies, mythologies, religions, and traditions, to "the ancient ancestry of the great mothers" and to female deities to build their understanding of ecology and of the place of humans in nature (Bandarage, 1997, pp. 307-340; Christ, 1994;

d'Eaubonne, 1994, p. 186; Shiva, 1995, pp. 173-185). Social and socialist ecofeminists, although sharing deep ecology's critique of anthropocentrism, are nevertheless critical of its relative indifference to androcentrism and to the structures of domination that divide people, such as capitalism and patriarchy. (Jackson, 1995, pp. 124-125; Plumwood, 1994, p. 208).

Radical cultural ecofeminists consider that women are closer to nature than men, postulating women's superior ability, based on their reproductive experiences and inherent nurturing capacities, to understand and act in support of environmental protection and all life forms. They also consider patriarchy to be the main source of the domination of women and nature. Ecological problems, overpopulation, and class conflicts are fundamentally male problems, the effects of culture and society built by males and for males' benefit. For example, though critical of ecofeminists who essentialize male culture, New (1996) agrees with the view that "the social reproduction of male domination and of ecologically destructive practices are inseparable" (New, 1996, p. 80). Plumwood (1998) argues that essentialism was more typical of the early stages of ecofeminism than of its more recent trends. For example, ecofeminists who are also socialist feminists do not embrace an essentialist understanding of women and the relationship between women and nature, nor do they agree with the subsumption of ecological and social problems as effects of male domination and postulate a variety of interactions between capitalism and patriarchy (King, 1994; Plumwood, 1994). Despite their considerable differences, common to all forms of ecofeminism is the placing of patriarchy at the core of the ecological crisis and the insistence on the connections between the oppression of women, the oppression of nature, and the oppression of all the social groups that have been naturalized and feminized as part of their oppression. This is why Plumwood (1994) envisions the possibility of a social ecofeminism as "general theory of oppression" (for a critique of the political and intellectual implications of some ecofeminist standpoints while positing a gender-informed environmentalism as an alternative, see Jackson, 1995).

These disparate forms of ecological consciousness are the ideological ways in which most people understand today the effects of the capitalist exploitation of labor and natural resources. Our reflections on social events and problems and attempts to explain their causes with the tools of the social sciences or philosophy "take a course directly opposite to that of their actual historical development . . ., " we begin "post festum, with the results of the process of development ready to hand" (Marx, 1974, p. 75), and we apprehend them through forms of consciousness that reflect both our location in the social structure as well as the dominant ideologies of the times. These and other forms of ecological consciousness (e.g., critiques of environmental racism, concerns with environmental justice) reflect individuals' class, gender, socioeconomic status, racial/ethnic divisions, and location in different social and geographic spaces. As such, they have a material base in the manifold ways in which environmental degradation, destruction of old forests, decline in biodiversity, the destruction of public space and undermining of community, the alienation of labor, and the deterioration of the health of the present and future generations affect different people in different ways, depending on their social and spatial locations. For the wealthy and better-off classes isolated from environmental hazards, urban decay, and urban sprawl, it is mainly a question of profits, personal safety, and lifestyle preferences, whereas for the working classes and the poor, especial those who belong to racial and ethnic minorities, it is a often question of life and death.[4]

To say that they are ideological forms of consciousness means simply to point out that they are partial and, therefore, offer misleading understandings to the extent they posit abstract, ahistorical explanations for phenomena that from a Marxist theoretical standpoint, have concrete, historically specific determinants in the dominant mode of production and its historically specific context. Each approach highlights aspects of the effects of capitalism on people and nature that need to be brought into public consciousness to mobilize people to struggle against the continuation of these exploitative practices. However, the explanations put forth to account for these problems, shaped by the social location of their advocates and the dominant theories and ideologies establishing structural limits to the thinkable, affect the kinds of counter-hegemonic ideologies that emerge as well as people's views about the kinds of actions they can take and the kinds of policies and political organizing considered desirable.

The forms of ecological consciousness previously examined are, to some extent, abstract negations of a status quo characterized by male dominance, environmental destruction, and the worship of economic growth and material consumption for their own sake; hence, the privileging of nature over humans, the blaming of men rather than the mode of production, and the rejection of all things Western in the pursuit of a "political ecology of nostalgia," according to which all non-Western philosophies, religions, cultures, and all times past were ecologically sound and nonexploitative (Mukta & Hardiman, 2000).

Explanations that blame anthropocentrism or patriarchy lead to limited understandings of the causes of environmental degradation and women's oppression. The most extreme positions rest on the assumption of universal, inherent flaws in human nature or in males, while postulating the inherent goodness of nature and of women. However, even those who recognize the historicity of the origins of current beliefs, attitudes, and practices and avoid essentializing men, by attributing explanatory value to the propensities and traits of individuals, narrow unnecessarily the range of political options open to environmental activists who, rather than struggling for structural and even systemic changes, end up focused on personal change or on specific, local issues that leave the capitalist structural determinants of ecological problems untouched and unchallenged. Also problematic are explanations that find the cause of environmental problems in technology, because they result in the abstract negation of industrialization and the uncritical praise, as desirable alternatives, of non-Western and precapitalist forms of production, social organization, and culture, which, on close examination, often turn out to be less ecologically benign and oppressive to women and direct producers regardless of gender (for a critique of some of those perspectives, see Mukta & Hardiman, 2000).

To argue, as Marxists do, that it is important to trace the capitalist origins of the phenomena that matter to all ecologically concerned people is not a form of reductionism, but an acknowledgement of the historical conditions that shape our lives and our relationship with nature and other life forms. Although it is important to engage in personal-level earth-friendly changes and to struggle to resolve local environmental problems, it is even more important to attain knowledge of the specifically capitalist economic processes, social relations, political vested interests, policies, regulations, and forms of consciousness that conspire to produce and reproduce wealth, power, health, and well-being for a small minority and environmental catastrophes, exposure to toxic chemicals, poor health, alienation, poverty, and insecurity for the vast majority of the people.

Individualistic and psychologistic explanations, stressing human or male greed, carelessness, selfishness, thirst for domination, consumerism, and so on can inspire

some individuals to change drastically their values and practices, adopting simpler and less-polluting lifestyles, recycling, becoming involved in local environmental activities, and helping others in their struggles (e.g., see Andersen, 1995). Whereas changes in individuals' consciousness and behaviors are important because they show, in practice, the possibility of leading a different and enjoyable life while minimizing one's contribution to environmental deterioration, in themselves these changes are not only insufficient to produce qualitative changes but can and have been easily coopted by businesses catering to the needs of those who practice what they preach and, for example, shop for organic produce and earth- and creature-friendly goods (e. g., see Brower & Leon, 1999).

Explanations in terms of natural limits and ecological laws often replicate the Malthusian trick of naturalizing the effects of social institutions and power relations. Marx was not a one-sided social constructionist and did not reduce nature to thought about nature or to a human construct. Marxists are not opposed to the notion that there are natural limits to what social organizations can accomplish, but become skeptical when natural limits are invoked to support the status quo and deny the possibility of establishing a more equitable form of social organization. This is why Marxists are likely to scrutinize the notion of natural limits and appeals to natural laws to explain the effects of sociohistorical and political processes that stand in the way of needed social changes.

Marx's analysis of the fetishism of commodities (Marx, 1974, pp. 71-83) is useful to demystify the extent to which notions of ecological problems, ecological limits, or natural limits are reified ways of referring to the effects of historically specific forms of exploitation of nature and labor. To avoid this naturalistic mystification, or the attribution of the effects of the mode of production to nature, it is important to differentiate and identify the limits of objective possibility (given natural laws), the limits of potential human capability (i.e., what is not only within the realm of possibility, given natural laws, but also technically possible), and what is historically possible, given the existing mode of production and balance of power between the contending classes (Mills, 1985-1986, pp. 472-483). The naturalistic mystification occurs when social, historical forces are construed as natural limits or natural causes. Thus, for example, famines can be explained by people's natural propensity to overreproduce, and environmental degradation can be accounted for by our having forgotten our place in the natural order of things, as one species among others and becoming, instead, a pernicious species, a blight on the earth. Another form of mystification is that which hides relations of domination under technological imperatives, postulating that it is industrialization, not capitalism, that causes environmental degradation.

A more subtle form of mystification is entailed in the critique of rationality. Mainstream environmentalism is uncritical of instrumental or formal rationality, considering it as a taken-for-granted characteristic of human nature, Western cultures, and philosophies culminating in the scientific practices and world outlook of Western industrial societies. Ecocentric and ecofeminist perspectives, on the other hand, consider it as a destructive human, perhaps uniquely male, trait that taints our culture, ideologies, and activities, including the production of knowledge, and a powerful contributing cause of ecological disturbances and environmental blight. Feminist skepticism about the desirability of instrumental rationality as a positive human trait is understandable because it has been ideologically used to legitimate economic exploitation (of people and nature), and male dominance over nature and women, who are then conceptualized as beings closer to nature than to culture and, therefore, nonrational or irrational and even less than human, for rationality is the

distinguishing trait that separates humanity from nonhuman life forms (Plumwood, 1995, 1998, p. 214).

Following Lukács' (1968) identification of the flaws inherent in German romantic anticapitalism, which eschewed the analysis of the realities of capitalist accumulation and instead focused on capitalism's superstructural effects, I argue that the ecocentric critique of instrumental reason today replicates the theoretical and political drawbacks of the critique of the cultural and subjective effects of capitalism typical of early German sociology, which reduced the essence of capitalist development to a change from "community" to "society" (e.g., Tonnies, 1963), or to a process of rationalization or disenchantment of the world (Weber, 1969, p. 155). This leaves outside the scope of theorizing and criticism the organic connection between instrumental, subjective, or formal rationality and its material conditions of possibility, the capitalist mode of production (Lukács, 1968, pp. 476-500). To some extent, a similar argument can be made about Horkheimer's (1969) critique of instrumental rationality, which has been influential in ecological thinking (e.g., see Leiss, 1994; for a different view, see Eckersley, 1994). Abstracting instrumental rationality from its specifically capitalist conditions and focusing on its form, Horkheimer argues that it is both " . . . an important symptom of a far reaching change that occurred in occidental thinking throughout the last few centuries" (Horkheimer, 1969, p. 16; my translation) and the product of a presumably innate human need to dominate nature (Horkheimer, 1969, p. 184).

The notion that rationality somehow emerged with capitalism underlies the Weberian notion of the disenchantment of the world, in other words, the secular displacement of value rational and traditional actions by instrumentally rational actions, whereby people and nature become means for the attainment of individuals' ends, and the ends are chosen in terms of utility, cost/benefits calculations, and efficiency, rather than on the basis of magical, emotional, traditional, ethical, or cultural grounds. Today, ecocentric environmentalists and some ecofeminists call for the "re-enchantment" of the world, seeking guidance from ancient and not-so-ancient philosophies, gods and goddesses, ways of life, or from attempts to regain a presumably lost and desirable unity with nature.

But what is decried today as Western or male rationality is actually capitalist instrumental rationality, which reduces people and nature to means for profit maximization and capital accumulation, for capitalism " . . . has left remaining no other nexus between man and man [and between man and nature] than naked self-interest" (Marx & Engels, 1848/1976, p. 487). If considered purely in formal terms, instrumental rationality is neutral in its implications; it refers simply to the adequacy of means to ends. Environmentalists themselves routinely behave just as rationally when they choose means adequate to their ends (e.g., recycling to avoid the accumulation of waste). The point is that formally rational behavior is neither the prerogative of capitalists or of males or of Western cultures; all human beings behave rationally in a formal sense and what varies, according to the historical context in which they live, is the nature of the means and the ends they rationally pursue. These, in turn, are determined by the material conditions formally rational actions presuppose that establish the actual content of formally rational behavior.

Weber identified the material or substantive conditions of formal capitalist rationality (e.g., the exploitation of labor, the expropriation of the direct producers from the means of production, income inequality, the lack of freedom underlying labor force participation) and acknowledged that these material conditions can be the source of material postulates or claims (e.g., equity, rational, or universal provision of needs) toward which formal economic rationality is absolutely indifferent

(Weber, 1969, p. 83). It is in that indifference that he located the theoretical limits of formal rationality, for it is impervious to the ethical and political implications of its effects, as demonstrated in numerous examples. For example, " . . . that the utmost formal rationality of *capital accounting* is only possible by the subjection of workers to the entrepreneurs' domination is another material irrationality specific to the economic order" (Weber, 1969, pp. 109-110, author's emphasis, my translation). Current examples of that irrationality are the gloom with which capitalists view the lowest unemployment rates in 30 years, and growth in per capita GNP, while wealth and income inequalities reach new heights.

The exploitation of nature is one of the material conditions of capitalist rationality and it too has given rise to substantive claims (e.g., sustainable development, ecological balance, preservation of biodiversity) toward which instrumental rationality is completely indifferent, unless ecologically sound measures are at the same time profitable or politically expedient. However, this indifference of formal rationality toward its ecologically and socially damaging effects is neither "irrational" (Weber) nor inherent in its form, but a manifestation of the class character of its content. What is rational for the capitalist class is rational for the mode of production (i.e., capitalist subjective and objective rationality coincide), but not necessarily rational for either nature or the majority of the world's population.

In light of these arguments, it follows that instrumental rationality always presupposes a material or substantive rationality embodied in its material conditions of possibility and actualized through the hierarchy of preferences governing individuals' choices of means and ends. Because Weber refuses to see the rationality behind the "irrationality" he eloquently describes, it is understandable that the alternatives he conceives preclude a change in the relations of domination and exploitation while positing, instead, the possibility of the rise of charismatic leaders or refuge in antithetical values, which is the road taken by ecocentric and some ecofeminist perspectives. The ecocentric conflation of capitalist rationality with instrumental rationality results, then, in the neglect of the capitalist structural and ideological causes of ecological problems, and the search for and adoption of religious, mystical, traditional and, presumably, inherently female (i.e., nonrational) value systems and ways of relating to nature and other people that although they might be poetical and beautiful, are less likely to be effective in the struggle toward a sustainable environment and human emancipation.

Adherence to ecocentric ideologies is more likely to lead to an understanding of social change that starts with personal consciousness and behavior (e.g., changes in lifestyles toward voluntary simplicity) on the assumption that macrolevel social change is simply the result of the sum of changed individual behaviors. However, not all the processes that lead to environmental deterioration, pollution, and population growth beyond what a given area can sustain are reducible to the sum of individual behaviors; they are the effect of complex structural tendencies that would require qualitative structural changes to change the undesirable environmental and human outcomes decried by ecologists of all persuasions. In this respect, Marxism can offer ecology a critique of capitalist rationality as well as the analysis of the conditions conducive to the emergence of an ecological rationality; there is no need to appeal to mysticism or religion to argue for the necessity of changes in the ways capitalism affects nature and all forms of life. Marxism can also identify the economic and political limits to the effectiveness of earth-friendly changes in individual behavior, and the structural barriers to qualitative changes in the macrolevel processes that continue to disrupt the environment despite the changes in personal behavior within some sectors of the population.

CONCLUSION

Does ecology need Marx? I wonder, at this point, what ecology is, for it seems to be an umbrella term like sexism and racism, which covers a variety of macrolevel and microlevel phenomena produced by different causes and lends itself to the development of a wide variety of conflicting ideologies and theoretical frameworks. I would prefer to change the question to the following: Are Marx and Marxism contingent or essential in the struggles against environmental degradation and all forms of exploitation and oppression? Although in the eyes of environmental activists, they may seem irrelevant in the context of day-to-day struggles, the need for an all-encompassing theory capable of illuminating the necessary connections between seemingly separate problems will emerge in time, as activists learn from their experiences that there are capitalist structural barriers to the effectiveness of their individual behavioral changes and legal and political successes. This is why it is important that Marxists do more than engage in theoretical critique. They should be involved in specific struggles, learning from their experiences and sharing their learning with those whose views may be different but whose political goals might be the same. This does not imply, however, that theoretical work should be secondary to political involvement. On the contrary, as the world systemic nature of capitalism becomes increasingly visible, the accelerated nature of the circulation of capital and labor are creating the conditions for the emergence of regional transnational working-class organizations and movements. At the same time, the exploitation of nature and the circulation of waste, pollutants, viruses, infectious diseases, pests, plant diseases, and healthy animals and plants deliberately or unwittingly taken from their natural habitat intensify and highlight the global nature of most ecological problems. As the situation worsens at the local, regional, national, and world levels of analysis, it will call for the Marxist historical analysis of its conditions of existence and reproduction through time and will also call for the development of regulatory agencies and planning. Marxist contributions to ecology that despite their importance and timeliness are today largely the concern of academics will at that time become even more relevant.

A careful reading of Marx and Engels' works leads to the realization that their political economy, firmly grounded on materialist premises, contains important theoretical categories and methodological guidelines for the theoretical analysis of the determinants of the current ecological predicament, and for the development of a Marxist ecology based on ecological principles central to Marxist theory (Burkett, 1999; Foster, 2000; Parsons, 1977). Inherent in the premises of historical materialism is the notion of the coevolution of nature and society. Human development, the unfolding of human potentials, and emergence of new needs and talents presuppose the material production and reproduction of life and of means of subsistence, processes through which both humans and nature change and are mutually sustaining. Marx postulates the existence of a process of social metabolism between humanity and nature and identifies, under capitalism, the presence of a metabolic rift brought about by agricultural and trade practices that despoil the earth without replenishing its resources and rob whole regions of their natural conditions of production (Foster, 1999). Rejecting ecology's radical division between nature and society, according to which societies face insurmountable natural limits, Marx and Engels offer a materialist and dialectical theory of the relationship between humanity and nature. Natural limits are both material and conditioners of social organization and human beings while, at the same time, operating through social conditions established by the level of development of the forces of produc-

tion and the existing relations of production. In other words, to the abstract materialism inherent in the dominant ecological perspectives that because of their undialectical standpoint, combine an idealist understanding of the causes of ecological problems with what amounts to a vulgar materialist understanding of natural limits, Marxism opposes a dialectical approach that preserves the materialist side of nature and its laws while acknowledging the history-making capacity of humanity (Timpanaro, 1975).

Although Marx's ecology can be recovered and developed through the investigation of Marx's, Engels's, and other noted Marxists' philosophical, methodological, and theoretical assumptions (Foster, 1999), important elements for constructing a Marxist ecology can also be identified through the exploration of the ecological effects of capitalist production, transportation, use of space, taken-for-granted patterns of consumption and waste, and so on. O'Connor (1988) contributed to the development of ecological Marxism with the conceptualization of a second capitalist contradiction as the basis for a different theory of economic crisis and transition toward socialism. The first contradiction and source of crises of underconsumption and overproduction "is the contradiction between capitalist productive forces and production relations"; the second contradiction is "the contradiction between capitalist production relations (and productive forces) and the *conditions* of production, or capitalist relations and forces of reproduction" (O'Connor, 1988, p. 13, author's emphasis), meaning labor power, nature, and the communal or general conditions of social production, such as infrastructures and means of communication (O'Connor, 1988, p.14). This theoretical innovation was received with both praise and criticism, resulting in a series of productive exchanges that deepened our understanding of the capitalist sources of ecological problems and of the complex implications of ecological struggles when placed in the context of local, national, and world inequality (Guha, 1994; Mingione, 1993).[5] Foster (1992) presents an alternative interpretation of the two contradictions as the "absolute general law of capitalist accumulation" and the "absolute general law of environmental degradation under capitalism," meaning the tendency toward producing wealth and simultaneously depleting and spoiling the natural conditions of wealth accumulation (pp. 76-78). Capitalism seeks to control the worse effects of its contradictions through various forms of state intervention, ecological restructuring, and cooptation of ecological concerns (e.g., the emergence of environmental economics and the pursuit of business as usual under the rhetoric of sustainable development and ecological modernization; Barry, 1999, pp. 264-269). However, the effects of the second contradiction are infinitely more difficult to manage than the first, and capitalism will eventually be unable to elude "the revenge of nature" (Foster, 1992, p. 80).

It is important to keep in mind, however, a third contradiction: that is, the contradiction between capital and labor, which has pivotal political and environmental implications because the greater the exploitation of labor, the greater its vulnerability to environmental problems and the greater the likelihood that workers' economic survival might clash with the goals of environmentalists. This is why Marxists bring to ecology the need to formulate ecological and environmental objectives while taking into consideration their potential effects on workers' current and future ability to make a living (for a discussion of the need to bring economic inequality into the core of ecological thinking see, for example, Mingione, 1993). This is why "the future of humanity and the earth lies with the formation of a labor-environmentalist alliance"(Foster, 1992, p. 79).

Marx said that the barrier to capital accumulation is capital itself and this is manifested in the periodic crises of overproduction and underconsumption, the progressive undermining of the conditions of production, and the ebb and flow of class struggles, setbacks, advances, and stalemates. The greater the destructive effects of the free market on nature, the more obvious the need for its antithesis (i.e., prevention, regulation, and planning). Upton Sinclair wrote *The Jungle* (1951) to highlight the inhuman conditions in which meat-packing workers worked and lived. However, as he said, instead of touching the hearts of the American people, he succeeded in touching their stomach, and the Food and Drug Administration was born. It is possible that environmental activists, struggling against the exploitation of nature and for a qualitative change in our relationship with the environment and other life forms may succeed, despite their current skepticism about Marx and Marxism, in releasing the collective energy needed to undermine the fetishisms of market freedom, competition, and unceasing economic growth in the public consciousness, thus paving the way toward social changes designed to end not only the exploitation of nature but the exploitation of labor as well. However, such changes do not happen automatically; in the absence of a widespread, ongoing, principled red-green dialogue, the most that is likely to be attained is an improvement in environmental conditions for the privileged and the better off. Does ecology need Marx? Is there any doubt?

NOTES

1. This article is a revised version of an article originally presented in March, 2000, at the Socialist Scholars Conference at the Borough of Manhattan Community College, City University of New York.

2. A very useful reader that brings together the main schools of ecological thinking today is Redclift and Woodgate (1995). There is a growing body of socialist and Marxist ecology literature; the journal *Capitalism, Nature and Socialism* is an invaluable resource. Recent contributions to this literature are O'Connor (1998), Foster (2000), and Burkett (1999).

3. For an excellent critical review of neo-Malthusian literature and policies, see chapters 1 and 2 of Bandarage (1997).

4. For example, in a recent article in the *New York Times*, James Fallows (2000), writing about the newly wealthy in the information and communication technologies world, states that the key issue that concerns them is the protection of the environment, not only because they are located in the most beautiful areas of the country but also because their ability to use that environment matters to them: "A software engineer with $2 million in stock options can't really imagine being laid off. He can imagine ill-planned urban growth ruining a forest where he likes to hike."

5. See *Capitalism, Nature, Socialism*, volume 3, numbers 3 and 4, and volume 4, numbers 1 and 2.

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