transport, and other branches of the economy, as noted by Martin O'Connor in an early contribution to *CNS*. The strength of his book will remain the author's assertion that a "theory of ecology as a process of change involving contingency and coevolution is necessary [for us] not only to understand the world but to change it in conformity with the needs of human freedom and ecological sustainability" (254).

Marx's Ecology and Rift Analysis

By Alan Rudy

If the purpose of *Marx's Ecology* is to respond to environmental critics of Marx, inside and outside Marxism, I would argue that (as with Paul Burkett's *Marx and Nature*), John Bellamy Foster provides a useful corrective to the more vulgar or close-minded critiques. If the purpose is to show that Marx engaged in the development of ecological analyses, I find the book less useful, and not only because those analyses were not associated with an ecological politics. If the intent is to reassess the relative separation of, and separation of the evaluation of, social science and natural science in Western Marxism, I would argue that Foster throws the baby, communal conditions of production and the state, out with the bathwater, the silence in much of Western Marxism about natural science. Finally, if the purpose of the book is to broadly equate ecology with Marx and Foster's conception of "the metabolic rift," I would argue that this does a major disservice to ecology. The concept of metabolic rift, as I read it, has a far greater affinity for natural resource economics than the dialectics of ecological Marxism. I will focus my comments on the last two points, the silence on general communal conditions and the problematic equation of ecology and "rift analysis," as a means to evaluate Foster's rejection of Western Marxism.

Among other things, I will argue that the two flaws are necessary for one another in the structure of Foster's *Marx's Ecology.* The author rejects the critique of the reifications of late-19th and early-20th century scientism to be found in tracts such as *Dialectic of Enlightenment.*[1] Horkheimer and Adorno, Gramsci and others insisted on the importance of (spatio-political) difference, internal differentiation, and artistic social self-expression in the context of the critique of capitalist modernity.

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[1]M. Horkheimer and T. W. Adorno, *Dialectic of Enlightenment* (New York: Continuum, 1988).

Relative to enlightenment science (once utterly separated from enlightenment philosophy and art), the Baconian conception of an atomized nature undergirds the assumption that there is one scientific method because, at root, all of nature is comprised of discrete piles of differently arranged, hierarchically organized, though fundamentally similar things. This is basically Foster's claim about materialist dialectics — that it is the one true science, applicable more or less universally to natural and social phenomena. As such, all one needs is the appropriate scientific method to develop an understanding of anything and everything. Foster's claim is that this science is rooted in Marx's work. Gramsci, Horkheimer and Adorno all argue that, in fact, the world is qualitatively differentiated along historical, material, spatial, social, cultural, technological and sex-gender lines. One undifferentiated method isn't enough; in fact, the dialectic of enlightenment is "progressive" only so long as philosophy and science are in generative tension. When a totaliaing objective science takes over, reifies the world, and rejects the material and differential efficacy of philosophy and art, the diversity of social and ecological life is lost.

Leo Marx makes a similar argument in *The Machine in the Garden* when he writes that the great 19th century pastoral literature in the U.S. touches, but does not resolve, the simultaneity of America's adoration of machines and romantic rejection of the urban social world that produces them.[2] Less insightful thinking resolves the tension in favor of machines or in favor of Jeffersonian small townism. In his book, Foster resolves the generative tension between nature and society, mediated by labor, and country and city, mediated by general communal conditions of production, by stressing natural science in the former relation and the metabolic rift in the latter. Foster does not address the increasingly social labor of the production of natural science, even obliquely, and much less so the infrastructural connections — spanning and regenerating the territories which encompass the rift — between country and city.

Along these latter lines, the metaphor of "metabolic rift" really only makes sense in the context of an emphasis on agricultural soils, a precapitalist, relatively non-contradictory, metabolic coherence, and a failure to explore the complexity and unevenness of capitalist agricultural intensification. The metaphor has a tendency to homogenize the different modes of enclosure and rural-urban relations (and politics) across Europe, and much less so across the Atlantic. It is this insight

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[2]L. Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (New York: Oxford University Press, 1964).

along political lines derived from the Italian case, in comparison with the rest of Europe and the U.S., for which Gramsci is most famous.[3] Further, the radically different dynamics of soil depletion and agricultural overproduction/concentration across land on different sides of the Atlantic — which are, in my recollection, never mentioned in Foster's book[4] — underlay much of the modes of production debate during the 1970s and 1980s. Important studies have suggested that the differential regional rates of soil depletion, agricultural/scientific intensification, Manifest Destiny, and overproduction are all of a piece in US history, rather than serially emergent as Foster suggests.

Returning to the list at the top of the last paragraph, I will bracket the suggestion that the metabolic rift implicitly indicates a sustainable coherence to precapitalist agriculture. It is possible that Foster's position, unstated in the book, is that the pace of the contradictions in soil reproduction under precapitalist social ecological conditions is far slower than that of capitalist agriculture. However, the issue of the metabolic rift runs into deep problems, particularly in the English case, where enclosure was associated with a massive increase in rural livestock, and therefore the production of livestock feces. The metabolic rift argument suggests that the movement of human and animal waste from the country to the city leads to the accelerated depletion of agricultural soils. However, the increase in rural livestock suggests that the problem may have been as much related to the maldistribution of rural wastes as the separation of rural from urban wastes. The scientific or cultural or infrastructural incapacity to engage in this redistribution of animal waste then would need to be explained. It is this redistribution of animal waste that would need to be explained. Further, the metaphor of rift stresses a gap when the increased human populations in urban areas, associated with capitalistic laws of

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[3]Gramsci may have been relatively silent on nature, natural science and technological development, but this is absolutely no reason not to build off of his insightful work as much as Foster wishes to build off of Marx's purported ecological characteristics. In short, Foster reproduces by inversion the very error he accuses Western Marxism of having initiated.

[4]This is a remarkably common error among Marxists seeking to take nature seriously. In the processes of looking at natural limits or natural obstacles to capitalist development, nature is treated as a fundamental constraint to be overcome technologically. Here, the historical dependency of capitalism on technological innovation for the resolution of crisis-ridden accumulation processes struck by overproduction invariably drops out of the analysis. A less dialectical perspective for a Marxist is hard to imagine. See A. Rudy, "On the Dialectics of Capital and Nature," *CNS*, 5, 2, 1994.

population, and the increased livestock populations in rural areas, associated with capitalistic agricultural production, oversaturate some regional metabolisms[5] while depleting social ecological conditions in other locales. This suggests a theory which, at least metaphorically, differentiates between the ecological consequences of rural agricultural intensification — soil depletion — and the ecological consequences of urban industrial intensification.[6]

Another moment in the increased productivity of capitalist agriculture raises the biggest problem in terms of the metabolic rift and its roots in the separation of labor from nature and country from city. Foster is silent on the importance of non-native crops to the increase in agricultural productivity as he is also on the changing forms of agricultural cooperation — what many have problematically called the rationalization of European agriculture — during enclosure.[7] The colonial exploration which "discovered," appropriated, and transported non-native crops to Europe connects "the country" in the South to "the country" in the North via the city in the North. In Foster's extensive account of the development of Darwin's theory of evolution, and its importance to Marx's ecology, no mention of the *Beagle's* role in colonial scientific exploration and species appropriation is made.

For Foster, the agricultural country and industrial city are treated as material vessels which passively contain, while being changed by, actively emergent technical forces and social relations. Social history is the active process by which spatial materiality is remade, reconstructed and reconstituted. I am not suggesting that Foster denies the importance of natural activity in (use-, exchange- and abstract) value production, but I am suggesting that historical activity is social, and ecological space is passive (and generally treated ahistorically) in Foster's account. Nature is active in production, but effectively unchanged by it except for the (negative) consequence of the socially produced metabolic rift.

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[5]Metabolism, of course, has both organicist and equilibrium focuses, though Foster in personal communication has indicated that he sees these connotations as unnecessary or contested.

[6]It is important to note, of course, that this approach to "ecological consequences" must include the parallel consequences, unevenly distributed across the class structure, for society, social relations, and social reproduction.

[7]Again, I am not asserting that Foster is not aware of these factors. I am suggesting that the structure and focus of his argument, however, brackets analyses of things such as these that Marx generally understressed or did not address.

The passivity of nature and space in Foster's account of Marx's position raises real questions about its ecological efficacy.

Foster seeks to show that Marx's dialectical, materialist and historical method was developed in conversation with natural scientists from Leibig to Darwin and was, as a result, at least implicitly ecological. This reclamation effort is deepened by showing the importance of Marx's ongoing engagement in a critique of the idealist tendencies of Malthus and natural scientists who mathematically or theoretically abstracted nature-society and rural-urban dynamics from social, political and economic history. While Foster doesn't make this point, Marx's critique of Malthus et al., is fundamentally bound up in the rejection of, and substantive meaning connected with, trans-historical, naturalized, or reified approaches to society-nature relations across space and time — across general modes and particular forms of (re)production. Here, Marx's emphasis on the qualitative differences in the character of society-nature relations — broadly and dialectically defined — between modes of (re)production is key and may potentially undermine Foster's implicitly passive ecological conditions.

Most importantly for the book, Foster argues that Marx's engagement with Leibig's soil chemistry and Darwin's theory of evolution indicates an ecological consciousness. Here, there is a problem. Foster at no point reviews the extensive material on the history of ecological science or histories of the idea of nature. While Foster provides a review of the history of materialism, such a history is not sufficient to show a connection between Marx and the ecological sciences. From Donald Worster, R.G. Collingwood, Clarence Glacken, Keith Thomas, J.D. Bernal, Leo Marx, and Neil Smith the historical connections between modes and forms of (re)production — economic, philosophical and literary — science and technology, and conceptions of nature and ecology are shown to be inordinately complex and contradictory.[8] These and other authors across the history of Western

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[8]See, J. D. Bernal, *Science in History* (Harmondsworth: Penguin, 1969); R. G. Collingwood, *The Idea of Nature* (Oxford: Clarendon Press, 1945); C. J. Glacken, *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century* (Berkeley: University of California Press, 1967); L. Marx, *op. cit.*; N. Smith, *Uneven Development: Nature, Capital, and the Production of Space* (New York: Blackwell, 1984); K. Thomas, *Man and the Natural World: A History of the Modern Sensibility* (New York: Pantheon Books, 1983); D. Worster, *Nature's Economy: A History of Ecological Ideas* (New York: Cambridge University Press, 1985); D. Worster, "The Ecology of Order and Chaos," *Environmental History Review*, 14, 1-2, 1990.

Marxist and the more contemporary ecological Marxist traditions, have pointed to a significant number of more explicitly — however flawed — ecological conceptualizations of society-nature relations than those of Leibig and Darwin.[9]

I should note that I am not taking the position that the ecological sciences have been sufficiently materialist, historical or dialectical in their orthodox development. However, given Foster's position as to the importance of Marx's theorization of the inner relation of labor and nature, including the capitalist "rift" in that relation, and the central interplay between social and natural scientific metaphors, a convincing account of the ecological Marx demands an interrogation of Marx's selective inclusion or translation of the language, metaphors and proto-sciences of ecology. This is not executed.

The limitation to Marx's ecology that is explicitly noted in Foster's book is that Marx did not theorize the "metabolic rift" as an important moment in the crisis tendencies of capitalism or the dynamics of socialist resistance and revolution. While Foster's work certainly acts as a partial corrective to the misapprehensions of Marx among deep ecological, liberal environmental and some Marxist ecological critics, I find it overstates the importance of ecological conditions and contradictions in Marx's work. In doing so, the complexity of Marx's method and the long and contested history of ecological science and metaphor is simplified as a means of shoe-horning ecology and Marx into a box called *Marx's Ecology.*

A far stronger argument, I believe, can be made that Marx's method — including (what we would now call) the multi-disciplinarity of his concerns — lays the groundwork for a Marxist ecology or an environmental Marxism but that Marx himself did not develop such a thing. This position does not preclude the kind of Marxological analysis that Foster has generated. However, the simplification of Marx's potential analysis of what we might now call environmental conditions (more broadly) or ecological conditions (more limitedly) to a focus on a "metabolic rift" in "natural" nutrient cycles as a result of enclosure and urbanization is quite problematic.

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[9]Along other scientific lines, and this certainly would be an anachronistic critique were it applied to Marx, the ecology of (oligophilic or polyphilic) mutualism and (facultative or obligate) symbiosis, however inner-connected to relations of competition, predation, and commensualism, lies utterly outside the physi-chemical and (largely) biocompetitive models of Darwin. D. H. Boucher, et al., "The Ecology of Mutualism," *Annual Review of Ecology and Systematics*, 13, 1982.

Perhaps most importantly in the context of a discussion of Marx, method and ecology, Foster's account of the metabolic rift deproblematizes the town-countryside separation/dualism in a fashion that is fundamentally flawed. Expressed in formulaic fashion, one of the most fecund moments in dialectical methods is the search for active terms which mediate static dualisms. The imagery of rift suggests a chasm between country and city, nature and society, and agriculture and industry. Yet the 19th century is the era of massive road, canal and railroad construction; of extraordinary scientific and technological innovation (only exceeded by the following century); and of phenomenal introductions and migrations of non-native crops, peoples, diseases, and invasive species all multi-directionally across the increasingly accessible globe. Further, it is the era of romantic, populist pastoralism — differentially expressed on each side of the Atlantic — and widely innovative forms of new, often multi-ethnic, community and neighborhood forms. These explosions in social infrastructures; scientific and technological innovations; world-wide social ecological introductions; and local-regional-national institutions and resistances, all actively mediate the ongoing transformation of country and city, nature and society, and agricultural and industrial relations.

When Marx wrote about these kinds of relations, not only was the alienation of labor and the degradation of nature at the core of his work, but the uneven transformation of different national cultures, national class relations, national political movements and national economic trajectories was always a concern. I have not done the alternative Marxology associated with the kinds of claims I have just made. However, if Marx separated his analysis of society-nature relations from his analysis of general communal conditions then, even if Foster is correct that Marx's environmental critics don't see the ecological consciousness at the root of his work, Marx's ecology is deeply flawed in its failure to enmesh capitalism's contradictory relation with labor and nature with its contradictory relation to cultures, modes of cooperation and social reproduction. But this takes us right back to the beginning of Foster's text, where he rejects the Western Marxist separation of social dialectics from natural dialectics. I think this may be the key problem with both Marx's ecology and *Marx's Ecology*.

Foster is right, and shows that Marx's understanding of nature and evaluation of natural resources is more developed than Marx's environmental critics know. However, Foster is wrong in suggesting that Marx had anything more than a possibly nascent ecological consciousness. The root of Foster's failure, as before, is that he throws

the cultural and communal baby out with the Western Marxist bathwater. Our contemporary understanding and broadening of Marx's "general communal conditions of production" are a key mediation of capital's relation to nature and labor and the relation of the capitalist countryside to the capitalist city.

Not only do general communal conditions of production mediate the relation between the capitalist countryside and the capitalist city but the state, in its multiple and manifold layers of irrationally rationalized bureaucracies, and partial openings to social movements and democratic participation, must be a moment in the analyses of ecological Marxists. Seeing ecological Marxism as necessarily flush with communal conditions and political institutions suggests that ecological Marxology must be more complex than found in Foster's account. Such a reading must search out not only Marx's concern with soils, soil chemistry, evolution, biology, agronomy and unhealthy urban living and working conditions but also the moments in Marx's work where the communal and political mediations of capital's contradictory relations with labor and nature are noted.

This sort of alternative Marxology might not only respond more intelligibly to Marx's environmental critics, but would also begin to construct a generative ground for new developments in Marxist theorization of nature-society relations themselves, particularly given the rather different material conditions "we" live with as a result of the history of capitalism, class struggle, state regulation, natural activity, and a million other things since Marx.

Nature, Dialectics and Emancipatory Politics*

By Costas Panayotakis

John Bellamy Foster begins *Marx's Ecology* with an overview of his "path to ecological materialism." In this overview the reader is informed that

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