

THE TREADMILL OF ACCUMULATION

Schnaiberg's *Environment* and Marxian Political Economy

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Allan Schnaiberg's "treadmill of production" model has formed the single most influential framework of analysis within environmental sociology in the United States. Schnaiberg's work is often characterized as "neo-Marxist," but its actual relation to Marxian political economy has been left obscure. The following article examines Marx's treatment of the treadmill as the crudest historical expression of the capitalist mode of production; the roots of Schnaiberg's analysis in Baran and Sweezy's conception of monopoly capital and Gabriel Kolko's conception of political capitalism; the later divergence of the treadmill theory and Marxian political economy; the disappearance of the explicit critique of capitalism in the joint work of Schnaiberg and Kenneth Alan Gould; and the reconvergence of these traditions in the current phase of environmental sociology characterized by the debate with ecological modernization. The treadmill model demonstrates that the choice between barbarism and civilization is not simply a question of the organization of the human relations within society but also a question of the organization of the human relation to the environment.

Keywords: Schnaiberg; Sweezy; treadmill; capitalism; environment

In 1994, soon after my book *The Vulnerable Planet: A Short Economic History of the Environment* (Foster, 1994) appeared, I was invited to give a keynote luncheon address to "Watersheds '94," a conference organized by the Environmental Protection Agency (EPA), Region 10, to be held in September of that year in Bellevue, Washington. I was encouraged to provide my full analysis of the ecological crisis and its social causes, but there was one catch: I was cautioned not to name the system; all explicit references to capitalism needed to be left out.

The condition imposed on me created a dilemma. My ecological critique necessarily involved a critique of the system. How could I engage in such a critique without naming it? Could I even give such a talk? The answer came to me fairly quickly: I could call the system "the treadmill of production" and use that as a device to bring out the most essential dynamics. I had at that time just received a complementary professional copy of Allan Schnaiberg and Kenneth Alan Gould's book *Environment and Society: The Enduring Conflict* (Schnaiberg & Gould, 1994). In many ways, this book seemed to be a step back in most respects from Schnaiberg's classic *The Environment: From Surplus to Scarcity* (Schnaiberg, 1980). Nevertheless, Schnaiberg and Gould had in one succinct formulation in their new book devel-

oped the concept of the treadmill of production to the point that it was almost the functional equivalent of capitalism (which was of course their intention). I thought I could make a strong argument using these terms.

That address, titled "Global Ecology and the Common Good" and published as the Review of the Month in the February 1995 issue of *Monthly Review*, argued that calls for moral transformation of our society to deal with ecological degradation typically ignored

the central institution of our society, what might be called the global "treadmill of production." The logic of this treadmill can be broken down into six elements. First, built into this global system, and constituting its central rationale, is the increasing accumulation of wealth by a relatively small section of the population at the top of the social pyramid. Second, there is a long-term movement of workers away from self-employment and into wage jobs that are contingent on the continual expansion of production. Third, the competitive struggle between businesses necessitates on pain of extinction the allocation of accumulated wealth to new, revolutionary technologies that serve to expand production. Fourth, wants are manufactured in a manner that creates an insatiable hunger for more. Fifth, government becomes increasingly responsible for promoting national economic development while ensuring some degree of "social security" for at least a portion of its citizens. Sixth, the dominant means of communication and education are part of the treadmill, serving to reinforce its priorities and values.

A defining trait of the system is that it is a kind of giant squirrel cage. Everyone, or nearly everyone, is part of this treadmill and is unable or unwilling to get off. Investors and managers are driven by the need to accumulate wealth and to expand the scale of their operations to prosper within a globally competitive milieu. For the vast majority, the commitment to the treadmill is more limited and indirect: they simply need to obtain jobs at livable wages. But to retain those jobs and to maintain a given standard of living in these circumstances it is necessary, like the Red Queen in *Through the Looking Glass*, to run faster and faster in order to stay in the same place. (Foster, 1995, p. 2)

Most of this drew directly on the very succinct description of the treadmill of production to be found at one point in Schnaiberg and Gould's *Environment and Society* (1994, p. 69). This was acknowledged in a footnote where I also noted that "in Schnaiberg's earlier work [*The Environment*] the treadmill is situated in the historical context of monopoly capitalism as described in Baran and Sweezy's *Monopoly Capital* and James O'Connor's *Fiscal Crisis of the State*" (Foster, 1995, p. 9).

The use of the concept of "the treadmill of production" was successful on the occasion of that one luncheon address for the EPA. It allowed a powerful critique of capitalism with no mention of capitalism by name. In fact, it was not even necessary to mention that there was a system at all. The treadmill metaphor had such a concrete, pragmatic character that it was greeted as a mere description of reality with none of the baggage of political or ideological critique associated with it. At the same time, the talk could be published word for word in *Monthly Review*, where the critique of the system was the principal thrust and where the argument would be readily seen as such.

Over the subsequent decade, however, I have made no further use of the term "treadmill of production" in my numerous analyses of the ecological contradictions of capitalism. I have not used it at all since that one occasion, except when called on to comment on the work of Schnaiberg and his associates. I have had no particular occasion to do so because I have not subsequently been in a situation

where I was unable to name the system. There has been no need therefore to use Aesopian language, and the “treadmill of production” concept in itself did not add anything indispensable analytically, not to be found in the more general Marxian (or neo-Marxian) ecological critique of capitalism. All of this raises the question of what the nature of the treadmill analysis is. Is it simply a Trojan horse for getting a radical ecological critique of capitalism inside the gates? What is the relation of this theoretical perspective to Marxian political economy? Does the treadmill of production perspective go beyond the critique of capitalism to a critique of Soviet-type societies as well? How has the treadmill perspective evolved? Is the “treadmill of *production*” even the right treadmill—should it be called “the treadmill of *accumulation*?” In the analysis that follows, I will try to answer these questions.

But it is pertinent to comment first about the treadmill metaphor itself and the historical reality that lay behind the construction of the metaphor. Although the term is a familiar one, probably none of us have seen a literal treadmill (apart from the ubiquitous exercise machine), and few of us, I imagine, have any clear sense of the historical meaning and significance of such a treadmill of production. Of course, we all have a general sense of what it is, and it certainly does not seem complex. Nevertheless, my own image of a treadmill fell far short of the reality. Once I became acquainted with what treadmills were like at the time of the industrial revolution it left me with a sense of horror. I cannot get out of my mind an engraving of workers on a treadmill at the House of Correction at Petworth in England early in the 19th century, which was published by the Select Committee on Gaols and Houses of Correction of the House of Commons in 1835, and that I first saw reproduced in the October 1971 *Scientific American*. It shows a row of 15 workers forced to climb in unison in a machine-like motion. As Eugene S. Ferguson wrote in the same article in the *Scientific American*,

In 1818 Sir William Cubbit introduced English prisoners to the treadmill, which was designed to employ men in grinding grain or in providing power for other machines. Each prisoner had to climb the treadmill a total vertical distance of 8,640 feet (2,630 meters) in six hours. The feat was the equivalent of climbing the stairs of the Washington Monument 16 times, allowing about 20 minutes for each trip. (Ferguson, 1971, p. 100)¹

Among modern thinkers, the one who probably gave the greatest attention to the historical significance of the treadmill as a relation of work and exploitation was Karl Marx. Marx pointed out that under capitalism, “the crudest *modes* (and *instruments*) of human labor reappear; for example, the *tread-mill* used by Roman slaves has become the mode of production and mode of existence of many English workers” (Marx, 1974, p. 360). For Marx, the reintroduction of “the treadmill again within civilisation” meant that “barbarism reappears, but created within the lap of civilisation and belonging to it; hence leprous barbarism, barbarism as leprosy of civilisation” (Marx & Engels, 1975, p. 434). The imposition of the treadmill on English workers symbolized for Marx the tendency of the capitalist mode of production to degrade the work and, hence, the worker in mind and body: “Not only do the poor devils receive the most wretched and meagre means of subsistence, hardly sufficient for the propagation of the species,” he wrote of the factory conditions of the time, “their activity, too, is restricted to revolting, unproductive, meaningless, drudgery, such as work at the treadmill, which deadens both body and mind” (Marx, 1974, p. 218; see also Marx & Engels, 1975, p. 576).

I do not know to what extent Schnaiberg was aware of this treatment of the treadmill in Marx. There are only a couple of direct references to Marx in *The Environment*, the most important one in a footnote. That footnote is devoted to the dual Marxist conception of technology as a key ingredient of development and also as a means of the degradation of the worker under capitalism (Schnaiberg, 1980, p. 145).

There is no doubt, however, that in organizing his critique of environmental degradation around the concept of the treadmill of production, Schnaiberg was taking up a primarily Marxist theme (although one that overlapped with some non-Marxist critiques, such as those of Joan Robinson, John Kenneth Galbraith, and C. Wright Mills). The treadmill theory grew in many ways out of a dialogue on the theory of monopoly capital, associated with Paul Baran, Paul Sweezy, and Harry Magdoff and what has sometimes been known as the “Monthly Review School” within Marxian political economy. Although some interpretations of Schnaiberg’s work have emphasized his references to James O’Connor’s *Fiscal Crisis of the State* (1973), leading revisionist historian Gabriel Kolko’s theory of political capitalism (Kolko, 1963, 1976) was much more fundamental to the analysis—there were approximately three times as many references to Kolko as O’Connor in the key chapter on production in *The Environment*, whereas references to Baran, Sweezy, and Magdoff exceeded those to O’Connor by a factor of five.² Most references in the chapter were in fact to authors who were writing for or had a close association with and would later write for *Monthly Review*, including, beyond Baran, Sweezy, and Magdoff, Giovanni Arrighi, Harry Braverman, Rafford Bowles, Richard Cloward, James Crotty, Richard Du Boff, Herb Gintis, John Gurfley, Stephen Hymer, Jacob Morris, Frances Fox Piven, John Saul, Howard Sherman, Immanuel Wallerstein, and O’Connor himself (Schnaiberg, 1980, pp. 205-273).

The treadmill of production concept itself was introduced as a more meaningful counterpart to Galbraith’s reference to the squirrel cage of industrial society in *The Affluent Society*. There, Galbraith (1958) had written, “Production only fills the void it has created . . . the individual who urges the importance of production is precisely in the position of the onlooker who applauds the efforts of the squirrel to keep abreast of the wheel that is propelled by its own effort” (p. 125). In response, Schnaiberg wrote, “Paralleling his [Galbraith’s] concept of the squirrel cage, we can trace out a ‘treadmill’ of production” (Schnaiberg, 1980, p. 227).

The treadmill of production, Schnaiberg claimed, could in a loose way be applied to both capitalism and Soviet-style socialism, but it was more specifically associated with capitalism, and in particular monopoly capitalism. As he himself put it,

While production expansion has occurred in socialist as well as capitalist societies, the particular form of the treadmill is more evident in the latter. The basic social force driving the treadmill is the inherent nature of competition and concentration of capital. (Schnaiberg, 1980, p. 230)

Here, he quoted from an article by Harry Magdoff (1976, p. 3), which had pointed to the tendency of capitalism to pursue accumulation above all else (“Accumulate! Accumulate! That is Moses and the prophets” [Marx, 1976, p. 742]). This accumulation tendency was rooted in class relations, activated by competition, and led to the concentration and centralization of capital (Schnaiberg, 1980, p. 230). With this overall conception in mind, Schnaiberg referred specifically to the “monopoly

capital treadmill,” growing out of the analysis of Baran and Sweezy’s *Monopoly Capital* (Baran & Sweezy, 1966; Schnaiberg, 1980, pp. 228, 245). For Schnaiberg, “both the volume and source of a treadmill of production is high-energy monopoly-capital industry” (Schnaiberg, 1980, p. 247). In terms of production, he therefore defined the system in the form of the Marxian critique of monopoly capital emanating from Baran, Sweezy, Magdoff, and Braverman—incorporating the analysis of the production and absorption of economic surplus while also taking into account the concomitant development of ecological scarcity.

In terms of labor, Schnaiberg’s original analysis relied heavily on the two-sector model of the competitive and monopolistic areas of the economy as proposed by Baran and Sweezy (1966) and O’Connor (1973). In this conception, workers in the monopoly sector benefited from some part of the surplus and thus tended to provide some degree of support to the system. Schnaiberg also drew heavily on Magdoff and Sweezy’s analysis of the buildup of the credit-debt system (or the tendency toward financial explosion and periodic meltdowns in a system mired in stagnation) as a principal force in the expansion of the treadmill.³ With respect to the state, Schnaiberg relied, as we have noted, most heavily on Kolko’s analysis of political capitalism, which saw the state as providing a key accumulation function, as well as on Kolko’s notion of how the corporations (the regulated) had captured the regulatory system. This was coupled with Baran and Sweezy’s explanation of how the state, by promoting military spending and an economy of waste, sought to expedite accumulation (the treadmill) despite growing social and environmental irrationalities. As Schnaiberg summed all of this up, “the bloom is partly off the monopoly capital rose” (Schnaiberg, 1980, p. 223).

In *The Environment*, Schnaiberg made it very clear that from an environmental perspective, the problem consisted mainly of “increased environmental withdrawals and additions” as the treadmill speeded up. He did not expect much from the gains in efficiency lauded by economists and today by ecological modernizationists within sociology. Such efficiencies tended to be economic, not ecological. As he stated,

While some capital intensification of production may lead to more efficient production techniques, these often involve substitutions of energy for older materials. The case of plastics is a prototype. Plastics are high-energy products that serve to substitute for larger volumes of wood and metals. (Schnaiberg, 1980, p. 230)

This was a theme taken from Barry Commoner, but Schnaiberg was also well aware of Nicholas Georgescu-Roegen’s critique of the economic process from the standpoint of entropic degradation.

The most radical element in Schnaiberg’s analysis was the recognition that the treadmill was a system, monopoly capitalism, and that the system, understood in these terms, could not be reversed short of a major revolt from below. Left to itself the productive system only went one way. He backed up his argument entirely in this respect with quotes from Magdoff and Sweezy. Schnaiberg thus pointed to the social and environmental implications of Sweezy’s dramatic conclusion that “Capitalism’s utopia in a sense is a situation in which workers live on air, allowing their entire product to take the form of surplus value, and in which the capitalists accumulate all their surplus value” (Schnaiberg, 1980, p. 249; Sweezy, 1974, p. 54). The main hope, he stressed, drawing on Magdoff and Sweezy, was that the economic and ecological contradictions of the monopoly capital treadmill would so destabilize the system as to create room for substantial change from below.

Schnaiberg concluded his chapter on production by emphasizing the “education of labor” as the basis for change. This meant:

- (1) educating labor to the discomforts—the environmental hazards—of the treadmill; (2) educating labor to the socially inefficient role of the state in the allocation of surplus to the treadmill; and (3) educating labor to the alternatives to the present state-supported treadmill system. (Schnaiberg, 1980, p. 250)

Without such education and the practical agency for change arising from it, he argued, it would be impossible for the treadmill “to be slowed and reversed” (Schnaiberg, 1980, p. 250).

Schnaiberg’s book was published in 1980 and had an enormous influence on environmental sociology in the United States, emerging as the most influential theoretical perspective. At the same time, environmental sociology, which had been enormously creative and growing in the late 1970s, went into decline in the early Reagan era and did not begin to recover until almost a decade later. What is most important, though, in looking at the fate of Schnaiberg’s treadmill theory is how a divergence occurred here between his work and Marxian political economy, with each proceeding in somewhat different directions. Here, I would like to interject a personal note. In the late 1970s, I was a student of Gabriel Kolko’s, and in 1980, I became involved increasingly in *Monthly Review*. Gabriel Kolko, Paul Sweezy, and Harry Magdoff were my mentors. Jacob Morris (a pseudonym) and Mike Tanzer—two other thinkers that Schnaiberg had relied heavily on—were friends/colleagues of mine. In the late 1980s, I worked for a time with James O’Connor as an editorial board member of the journal *Capitalism, Nature, Socialism*. I can therefore say with some authority that although we were all interested in environmental issues, none of those around *Monthly Review* or in the main traditions of Marxian political economy in the 1980s (with the exception of O’Connor) were at all aware of Schnaiberg’s analysis.

I myself was looking into the relationship of the monopoly capital model to the production of waste, with more than a little environmental consciousness mixed in. Two books that I completed, *The Faltering Economy*, coedited with Henryk Szlajfer (Foster & Szlajfer, 1984), and *The Theory of Monopoly Capitalism* (Foster, 1986), would have benefited from a knowledge of Schnaiberg’s work. Yet, I had no such knowledge until after I published my book *The Vulnerable Planet* in 1993, when I started to look more closely at environmental sociology in the United States, and after a complementary copy of Schnaiberg and Gould’s book *Environment and Society* had crossed my desk. O’Connor, of course, knew about Schnaiberg’s work much earlier (see O’Connor, 1988, p. 13) but did not incorporate it into his work.

How is it that there was almost no interaction between Marxian political economy and the treadmill of production analysis, even though the latter had in many ways grown out of the former? I have puzzled over this. I think that the main reason must have been that the Marxian political economy organized around *Monthly Review* went through a shift at this time. Formerly, a lot of attention had been given to what Joan Robinson (1978) called the “second crisis of economic theory” (p. 8), namely, the more qualitative issue of what is produced as opposed to the quantitative issue of the level of production and employment. But with the reemergence of stagnation in the 1970s and its deepening in the early 1980s, there was a shift back to issues of the first crisis of economics, that is, jobs and production levels. At this time, the whole problem of limits to growth, which had been associated with the

environmental critique, disappeared. At the same time, Marxian political economists became more and more focused in the 1980s on militarism and imperialism as the empire struck back against world revolutionary movements. Kolko shifted from issues of political economy and the state almost completely to the 20th-century history of war and war preparation.

Simultaneously with this, I think, environmental sociologists became more insular, more involved in the internal discussions of their own field and less involved (for a time) in questions of imperialism, war, and economic crisis. Environmental sociology thus became more disconnected from the root critique of the system emanating from Marxism. One could easily see the differences in discourse represented by Schnaiberg and Gould's *Environment and Society* (1994) as compared with Schnaiberg's *The Environment* (1980). Direct references to capitalism had all but disappeared, erased almost totally by the metaphor of the treadmill. Magdoff and Sweezy—the thinkers most frequently referred to in the previous book—had vanished completely from this second book, as had all the writers associated with *Monthly Review*, apart from Braverman. Kolko and O'Connor each appeared only once (Schnaiberg & Gould, 1994, p. 107). The discussion of labor was sharply curtailed, and the hope for “educating labor” so evident in the first book was conspicuous in its absence in the second. The historical context of the argument in a certain stage of production seemed to have been lost. Although *The Environment* had been integrated with a theory of economic crisis, namely, Magdoff and Sweezy's analysis of stagnation and the debt explosion, this no longer was present in any significant sense in *Environment and Society*.

To be sure, a careful reading of Gould and Schnaiberg's book suggested that the underlying theory had not changed at all—it was just as deep and critical as before. The outline of the logic of the treadmill in Table 4.1 on page 69 of *Environment and Society* became the basis of my address to Region 10 of the EPA because it was clear that the treadmill model was an ecological critique of capitalism rooted in an understanding of the political-economic tendencies of the system. And it had the advantage, like Veblen or Mills, of providing a critical language that seemed to conform to American pragmatism, seemingly divorced from ideology and theory. It thus could be used to convey critical ideas to those who would otherwise be resistant. To my mind, it was also superior to O'Connor's second contradiction of capitalism model because it was concerned directly with the crisis of the earth, not simply how ecological conditions shaped the economy.

Nevertheless, Schnaiberg and Gould's retreat, at least at the level of discourse from Marxism and radicalism, had its effect on me in 1994. Aside from providing a Trojan horse for the penetration of the system's ideological walls, I could see little of ultimate importance in the treadmill model—especially in its reincarnation as a critique of industrial society more than capitalism. Did not the very metaphor of the treadmill, although skillfully employed, detract from the historical critique that was needed? Was Aesopian language necessary or useful in developing a critique of the ecological contradictions of the system?

Hence, a decade ago, in 1994, when I first encountered Schnaiberg's *The Environment* and the works that flowed out of it—and briefly employed it in a talk—I nonetheless concluded that the treadmill model had been surpassed ecologically by recent developments in the Marxist tradition that had done so much to inspire it in the first place. Although Schnaiberg at his most radical point had called for a slowing down and reversal of the treadmill, Paul Sweezy, writing in June 1989 in his “Capitalism and the Environment,” while unaware of the treadmill of produc-

tion model as such, had been even more definite and radical: "What is essential for success is a reversal, not merely a slowing down, of the underlying trends of the last few centuries" (Sweezy, 1989, p. 6). My own book *The Vulnerable Planet*, coming out of the same tradition, had examined the deep historical roots and global nature of capitalism's relentless degradation of the environment (Foster, 1994). O'Connor's second contradiction model, while focusing ultimately on economic rather than ecological crisis, had spawned a wide-ranging tradition of critical analysis. Elmar Altvater (1993) integrated Marxian value theory and thermodynamics. Later in the 1990s, Paul Burkett (1999) provided a window into Marx's ecological theory of value. And other concepts, derived from Marx, such as the theory of "metabolic rift," were introduced (Foster, 2000). All of this seemed to dwarf the treadmill theory.

The biggest weakness of the treadmill of production theory, from a Marxist perspective, was that it concentrated on the wrong treadmill. To understand the major thrust and inherent dangers of capitalism, it is necessary to see the problem as one of a treadmill of *accumulation* much more than *production*. Of course, the two are not separate. In the Marxist perspective, all is traceable to the relations of production and to the social formation arising out of the mode of production at a definite historically specific period. But the core issue where capitalism is concerned is accumulation. It is that which constitutes the dynamism and the contradictions of the capitalist mode. The best way to describe this briefly, although space does not allow a full discussion of its implications, is in terms of Marx's general formula for capital—M-C-M'. In this formula, money capital is transformed into a commodity (via production), which then has to be sold for more money, realizing the original value plus an added or surplus value, distinguishing M'. In other words, capital, by its nature, is self-expanding value. This accumulation dynamic is enforced by the competitive tendencies of the system and is one with the concentration and centralization of production. It is rooted in a system of class exploitation. As Sweezy put it in "Capitalism and the Environment,"

The purpose of capitalist enterprise has always been to maximize profit, never to serve social ends. Mainstream economic theory since Adam Smith has insisted that by *directly* maximizing profit the capitalist (or entrepreneur) is *indirectly* serving the community. All the capitalists together, maximizing their individual profits, produce what the community needs while keeping each other in check by their mutual competition. All this is true, but it is far from being the whole story. Capitalists do not confine their activities to producing the food, clothing, shelter, and amenities society needs for its existence and reproduction. In their single-minded pursuit of profit, in which none can refuse to join on pain of elimination, capitalists are driven to accumulate ever more capital, and this becomes both their subjective goal and the motor force of the entire economic system.

It is this obsession with capital accumulation that distinguishes capitalism from the simple system for satisfying human needs it is portrayed as in mainstream economic theory. And a system driven by capital accumulation is one that never stands still, one that is forever changing, adopting new and discarding old methods of production and distribution, opening up new territories, subjecting to its purposes societies too weak to protect themselves. Caught up in this process of relentless innovation and expansion, the system runs roughshod over even its own beneficiaries if they get in its way or fall by the roadside. As far as the natural environment is concerned, capitalism perceives it not as something to be cherished and enjoyed but as a means to the paramount ends of profit-making and still more capital accumulation. (Sweezy, 1989, pp. 7-8)

It is not that the treadmill of production model is not cognizant of this problem of accumulation; it is recognized in the model, particularly in Schnaiberg's original version. But the emphasis is not on accumulation and the social relations of accumulation but on production and technology. So there is a significant tendency, I would argue, to underestimate the problem and its inner complexity within the system. Moreover, most readers not already attuned to these issues will not see the relation of the treadmill of production to accumulation at all. The very treadmill of production metaphor, so useful in some ways, militates against that.

The other problem—not an inherent one but one of emphasis rooted in the central metaphor—is that the treadmill of production framework is focused almost exclusively on scale and relatively little on system, except insofar as it related to scale. The problem becomes the unidirectionality and the speed of the treadmill, which means increasing scale. This fits the argument on additions and withdrawals and conforms to the dominant emphasis within the environmental movement on the problem of carrying capacity. It captures the quantitative aspect of the confrontation between economy and ecology. But the more qualitative dimensions of the problem frequently get lost, and the interactions inherent in the system. It is not simply a question of scale but of dislocations in the environment. Capitalism seeks to reduce and simplify human labor to exploit it more effectively. Similarly, with the environment, capitalism seeks, for example, to replace an old growth forest with all of its natural complexity with an industrial tree plantation that is ecologically sterile, dominated by a single species, and “harvested” at accelerated rates. A detailed “division of nature” accompanies the detailed division of labor under capitalism, with frequently disastrous results (Foster, 1994, pp. 111-112). To highlight scale almost exclusively is often to lose sight of this dialectic. It also detracts from knowledge of the microtoxicity that is a major part of today's environmental problem. Finally, it can blind one to what Marx called the “metabolic rift” in the organic human relation to nature. The naturally given human relation to nature is torn asunder through the polarization of town and country and the extreme division of nature with horrendous results.

Quantitative scale problems have to be seen in relation to the qualitative aspects transforming the nature of the environmental problem. Capitalism is certainly governed by the drive toward growth and accumulation. But its own distorted existence means that this has to be done in certain ways. It is easier for the system to grow by producing depleted uranium shells to be used in Third World wars or by expanding agribusiness devoted to producing luxury agricultural goods for the relatively well-to-do in the rich countries than it is for it to protect the integrity of the environment or to provide food to those actually in need. To reduce the problem of the environmental problem to the issue of scale—however much that constitutes the first step in addressing the problem—is to underestimate the systematic obstacles built into the qualitative (use value) structure of the existing system. At the same time, it downplays the full range of possibilities that might be opened up if system change allowed qualitative, not simply quantitative, transformations in human and human-natural relations.⁴

All of this made me hesitate before the treadmill of production model. But a decade further on, I have also come to see the enduring importance of the work of Schnaiberg and his associates and have concluded that the reconvergence that seems to be occurring between the treadmill model and Marxian political economy is important and necessary. I will give two reasons for this, both of which are in a sense institutional, related to the specific development of environmental sociology.

First, beginning in 1994, I became increasingly aware of and involved in environmental sociology in the United States. Part of this had to do with my role as a coeditor for a time of the journal *Organization & Environment* (a journal with which I still have a close connection), in which I actively sought to promote environmental sociology as a field. It became clear to me before too long that although there were only a handful of researchers in environmental sociology that were connected directly to the treadmill model, it was, nonetheless, the central analytical framework in environmental sociology in the United States, separating it from European environmental sociology. In some ways, environmental sociology, in adopting Schnaiberg's analysis, was in an analogous position to institutionalist economics in the United States, which had been influenced by Veblen. In both cases, radical traditions of political-economic critique were promoted—ones that had close relations to Marxist thought while also reflecting a distinctly American pragmatism.

Second, this all took on added significance in my mind as a result of the growing debate between ecological modernization theory emanating from Europe and treadmill of production theory centered in the United States. All empirical attempts to refute ecological modernization theory, which claimed that environmental reform or a kind of green modernization was a tendency of modernization in general in the advanced capitalist states, relied heavily for the theoretical basis of their refutations on the treadmill of production perspective, which provided an elegant, empirically testable set of hypotheses at the level of middle range theory. In other words, what the treadmill theory lacked with respect to Marxism in its overall worldview it made up for in the precision of its points around a narrow range of crucial issues. In particular, the work of Richard York, together with Tom Dietz and Eugene Rosa (who together have won the outstanding publication award this year in environmental sociology), demonstrated that an empirical approach that relied heavily on the treadmill model constituted the most effective response to those who argued that the system would simply modernize so as to be compatible with the earth (see York, Rosa, & Dietz, 2003).

The treadmill of production model thus raises the most crucial questions that have to be addressed if the environmental crisis is to be recognized for what it is. Interestingly enough, ecological modernization theorists caught up in this debate have come to see the theoretical developments in environmental sociology arising from the reawakening of Marxist environmentalism to be add-ons to the treadmill perspective. I was surprised, therefore, to see some of my own work on Marx's theory of metabolic rift classified in discussions as belonging to the treadmill of production perspective. This shows how central this tradition has become in certain debates—in that Marxist environmentalism is ironically seen as reinforcing the treadmill of production model, rather than the reverse.

In describing the environmental problem as arising from a treadmill of production, Schnaiberg captured the futility and irrationality of a system of production that frequently degrades the minds and bodies of the workers while pursuing an endless Sisyphean labor. It is well to remember that for Marx the treadmill stood for the barbarism within civilization. The treadmill, which was long utilized in English houses of correction, earned the hatred of workers, who feared being consigned to it. By choosing this particular metaphor, therefore, Schnaiberg, whether fully cognizant of its historical significance or not, highlighted a major contradiction of capitalism, which, for all its profession of civilization and modernization, never truly surmounts a brutal, barbaric relation to human beings and nature—rob-

bing both human beings and the earth on an ever-increasing scale. The dire global implications of this predatory as well as pecuniary system (to borrow Veblenian language) are only now becoming known. Hence, my original reaction—that the only reason to refer to the treadmill of production perspective was if one were compelled to use Aesopian language to refer to capitalist reality and sought to avoid all ideological red buttons while conveying the same critical message—was wrong. It was wrong because this tradition of thought by its very nature (and its central metaphor) serves to remind us in quite deep and perceptive ways of the barbaric, unsustainable character of capitalism's relation to humanity and nature even as the system seemingly expands and prospers. This is by far the most important message that environmental sociology has to convey.

NOTES

1. Use of treadmills in houses of correction in England preceded the year 1818 referred to by Ferguson because they were already employed in Bridewell and other early houses of correction/workhouses (known as Bridewells) probably as early as the 17th century (see Farrington, 1996, pp. 6, 99-95).

2. These rough estimates are made by adding the separate references to these thinkers in the texts along with the number of times they are cited in the footnotes.

3. Schnaiberg's use of Magdoff and Sweezy's analysis of stagnation and the financial explosion was very extensive. In all, he cited and quoted from seven works coauthored by these two authors, four additional works authored by Magdoff, five additional works written by Sweezy, along with *Monopoly Capital* by Baran and Sweezy.

4. These comments reflect current research being carried out with Richard York on the subject of system and scale in the environmental crisis.

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