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Sociobiophysicality and the Necessity of Critical Theory: Moving beyond Prevailing Conceptions of Environmental Sociology in the USA

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Abstract

Today, to perceive the link between society and environment does not require that we engage in an effort of great abstraction. What remains paradoxical is that the intensity and scale of societally induced environmental degradation, which rose to historically unprecedented levels during the latter half of the 20th century, is synchronous with an equally impressive increase in public concern for and attention to the biophysical world. This article examines values-based and traditional Marxist-oriented approaches to environmental sociology in the USA in order to assess whether or not – and if so, how exactly – these approaches help us make sense of the aforementioned paradox. Against this background, the necessity of critical theory for environmental sociology is illuminated. In order to further research efforts accordingly, this article advances the concept of sociobiophysicality, which allows us to grasp objective drivers of human-ecological transformation and forms of subjectivity as synchronous with the commodity form.

Keywords

alienation, critical theory, dialectics, environment, Marxism, political economy, value

Introduction

Faced with what appears to be a mounting human-induced ecological crisis, social scientists have devoted an increasing amount of intellectual energy to understanding the link between human society and the biophysical environment in recent years. Efforts to elucidate the social processes energizing antagonisms between society and environment have been framed in various ways – from the political (Brulle, 2000; McWright and Dunlap, 2011; Markowitz and Rosner, 2002) and economic (Foster et al., 2010; O'Connor, 1998; Schnaiberg and Gould, 2000), to degrees of pro-environmental attitudes and behaviors (Dunlap, 2002; Routhe et al., 2005); from social domination under modern patriarchy (Merchant, 1980, 1995) to science and technology, or lack

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thereof (Mol, 2003; Mol and Spaargaren, 2002; York et al., 2003). Despite this fragmentation – a trend that cannot be isolated from social scientific treatments of the environment – these efforts are unified in their aim to include the biophysical as a critical factor in social analysis. An important aspect of this research has been the focus on the socio-historical drivers of environmental problems (see e.g. Black, 2012; McNeill, 2000; McNeill and Unger, 2010; Pred and Watts, 1992). This work shows that the relationship between modern society and the environment continues to be detrimental to sustainability.¹ The specific form this relationship has taken during the contemporary era is characterized by *general antithesis*. That is to say, modern society posits ‘nature’ as an external object which may then be quantified, manipulated, and controlled.

One of the most unnerving characteristics of the relationship between modern society and the environment (referred to as the environment-society problematic hereafter) is that the role of modern society in perpetuating environmental problems is becoming increasingly visible, yet less and less understandable. Today, to perceive the link between society and environment does not require that we engage in an effort of great abstraction. Indeed, environmental issues and problems are all around us – e.g. in erratic weather patterns and resource depletion, on the one hand, and reflected in advertisements and political discourse, on the other. What remains paradoxical, however, is the fact that the intensity and scale of societally induced environmental degradation, which rose to historically unprecedented levels during the latter half of the 20th century (McNeill, 2000), is synchronous with an equally impressive increase in public concern for and attention to the biophysical world (Schnaiberg, 1994).² In other words, although people are clearly paying more attention to the biophysical than ever before, key indicators suggest that developments are pointing in the opposite direction.

Intuitively, one would expect increased media attention, concern expressed by major politicians, a seemingly endless chain of policy-oriented conferences – not to mention the increasing amount of intellectual energy both natural scientists and social scientists have devoted to analyzing the environment-society problematic with an eye toward ameliorating human-induced environmental destruction – to at least lead to a decline in the rate of destruction increasing. Yet, this has not been the case. Admittedly, the intensifying attention that has been paid to human-induced environmental destruction also could be interpreted simply as symptomatic of the rising scale of the latter, without implying that public interest should necessarily translate into a reduction in the scale, or in the scale increasing. However, rather than accepting such an interpretation of recent trends, the purpose of this examination is to focus directly on indications suggesting that while environmental destruction is becoming increasingly visible and less deniable, the paradoxical process at work remains largely concealed. As I will endeavor to demonstrate, in order to better grasp the paradox of increased environmental degradation amid widespread attention and concern it is essential that we scrutinize the logic of modern capitalist society in general, and its early 21st-century incarnation in particular.

To this end, it is necessary to start out from four central propositions. First, understanding the positive correlation between increased global ecological despoliation and widespread attention and concern during the latter half of the 20th century must begin at the theoretical level with reference to alienation and reification understood as essential mediating processes between the *non-identity* of

- 1) the objective dimension of the environment-society problematic – that is, the concrete human transformation of the biophysical environment through labor; and
- 2) the subjective dimension of the environment-society problematic – that is, our perception and understanding of the natural environment.

Second, defining aspects of US environmental sociology are *reflective of* alienation and reification as expressed by the research gap between a subjective values-based approach and an objective traditional Marxist-oriented approach. Third, the elusive nature of alienation and reification demands a level of theoretical rigor and critique best exemplified by key contributions of early Frankfurt School critical theory, namely, socio-historical reflexivity and immanent critique of ideology. Fourth, US environmental sociology requires a more thorough understanding of its own historicity, including an awareness of its own immersion in the constellation of social forces which effectively operate in and through not only the biophysical, or so-called ‘external nature’, but the human body/consciousness, or so-called ‘internal nature’, as well. This final proposition lays down the outer parameters for the concept of *sociobiophysicality* (SBPh) – referring precisely to that constellation which creates it.

After providing a brief sketch of the formation of American environmental sociology, I will examine both the values-based approach and ‘traditional Marxist’ environmental sociology. I will then situate the concept of SBPh within a critical theoretical framework grounded in an understanding of alienation and reification. Against this background, I discuss the socio-ecological tensions underlying the production of value, so as to provide a more substantial illustration of SBPh and the necessity of critical theory for environmental sociology.

The Formation of American Environmental Sociology and the Values-Based Approach

The ‘official’ development of environmental sociology in the USA began in the late 1970s and was initiated by Catton and Dunlap, whose 1978 essay, ‘Environmental Sociology: A New Paradigm,’ is now commonly recognized as the first formal attempt to delineate an environmental sociology proper.³ Catton and Dunlap’s ‘human exemptionalist paradigm’ (HEP) presents a set of fundamental assumptions they believe point toward an underlying anthropocentrism uniting even the most divergent sociological approaches and theoretical orientations (Catton and Dunlap, 1978, 1980; Dunlap and Catton, 1979). For Catton and Dunlap, the HEP illustrates how the entire sociological tradition, especially the classical canon (i.e. Marx, Durkheim, Weber), is devoid of systematic insight into environmental problems. Approaches that fall within this domain, according to Catton and Dunlap, analyze social factors, forces and institutions separate from the biophysical environment. Following Kuhn (1996 [1962]), Catton and Dunlap claimed that this supposed ‘impasse’ signified a scientific crisis that marked the opportunity for a paradigmatic shift (i.e. environmental sociology).

Questioning what they considered to be sociology’s inherent anthropocentrism, Catton and Dunlap developed a New Environmental Paradigm (NEP), later termed the New Ecological Paradigm. The fundamental premises of the NEP revolve around three basic assumptions listed below (see Catton and Dunlap, 1978: 45 [emphases added]):

- Human beings are but one species among the many that are *interdependently* involved in the *biotic communities* that shape our social life.
- Intricate linkages of *cause and effect* and *feedback* in the web of nature produce many *unintended consequences* from purposive human action.
- The world is *finite*, so there are potent physical and biological *limits* constraining economic growth, social progress, and other societal phenomena.

While the initial attempt to circumscribe an environmental sociology proper in the late 1970s was fueled by the felt need to incorporate biophysical factors into sociological research, the historical

(and dialectical) genesis of contemporary concern for the environment was left unquestioned. Although Catton and Dunlap's appropriation of Kuhn is certainly questionable, especially in light of the debates regarding the applicability of Kuhn's scientific revolution thesis to the social sciences (see e.g. Habermas, 1983 [1981]; Hassard, 1993; Lakatos, 1970, 1980), today we may ask: does an overarching anthropocentrism connect sociology generally and the classics, which represent different agendas respectively (cf. Buttel, 1978; Foster, 1999)? If so, does this represent an impasse worthy of Kuhnian revolution? As I will endeavor to demonstrate, the push to establish environmental sociology's niche within the discipline, far from signifying scientific crisis, is perhaps more indicative of the incorporation and projection of environmentalism's ideological concerns (Bloor, 1991 [1976]: 79–83; cf. Luhmann and Fuchs, 1994: 129). For the origins of environmental sociology, this involved the twin tasks of demarcating the uniqueness of a specialization's territory (environmental sociology) while simultaneously legitimizing the new approach. As a consequence, efforts to establish environmental sociology as a new sub-discipline eschewed the most important theoretical insights of the classical tradition in an effort to legitimate the specialization's novelty.

It appears that from the retrospective of more than 30 years later, the early efforts to ecologically revolutionize sociology have resulted in the uncritical incorporation of problematic epistemological assumptions of US environmentalist discourse, as evidenced by the values-based approach to environmental sociology. These assumptions rest on the notion of an unmediated relationship between concrete human-ecological transformation and the social perception and understanding of the natural environment. When the history of US environmentalism is taken into account, for example, it is typically couched within the basic notion that the cumulative effects of human-induced environmental degradation in post-World War II American society reached a significant level where public attention to the environment coalesced with a variety of specific political and cultural factors during the 1960s (see Dunlap and Mertig, 1992; Gottlieb, 2005 [1994]). On this basis, a normative framework is constructed from which solutions to environmental problems are located within the realization of individual ecological consciousness. It is perhaps not surprising, then, that the values-based approach is driven by a strong normative commitment aimed toward increasing individual environmental awareness.⁴ Unfortunately, the NEP-influenced values-based approach treats environmental concern (taken here to be a 'surface-level phenomenon') as if it is somehow directly indicative of more fundamental, underlying social dynamics. According to the critical theoretical perspective elaborated in this article, however, in order to understand contemporary environmental concern effectively, environmental sociologists must recognize concern for the environment as a *historical manifestation of underlying social dynamics*.

*The Values-Based Approach*⁵

Although the concept of values has been defined in various ways, when researchers talk about environmental values they are usually referring to 'the various ways in which individuals, processes and places matter, our various modes of relating to them, and the various considerations that enter into our deliberations about action' (O'Neill et al., 2008: 2). To study the specific ways individuals or groups relate to environmental values is to examine the ways these relationships bring about different sources of environmental concern (O'Neill et al., 2008: 2).⁶ The values-based approach typically follows a two-fold formula:

- 1) measurement of individual environmental values; and
- 2) analysis of their relationship to behavior deemed 'environmentally consequential' (Dietz et al., 2005: 336).

The system of value measurement developed by Rokeach (1973) and Wicker (1969) has laid the foundation for the majority of empirical work on environmental values; and research based upon Ajzen and Fishbein's (1980) theory of reasoned action, having been deemed *statistically* valid, remains essential for analysts trying to explain the somewhat tenuous relationship between environmental values and behavior.⁷ Survey-based methodology (e.g. mass phone or mail public opinion surveys) is favored among values researchers, who use this technique to uncover the effect of group differences (race, class, gender, etc.) on so-called 'environmentally consequential behavior' (e.g. recycling, driving behavior, support for environmental legislation, and so on). Environmental values, measured by regression and treated as dependent variables, are then explained with reference to various factors, such as age, race, class, sex, political party orientation (among various other demographic control variables). These values are then employed in conclusion sections of journal articles where they are typically invoked in discussions of how to develop a more sustainable relationship with the environment.

One of the most striking and problematic features of the values-based approach is that it simply assumes environmental values have the ability to influence decisions relating to individual environmental behavior in practically meaningful and politically significant ways. By relying on data derived from public opinion surveys, for instance, this approach effectively reifies the 'public' by expecting a select group of survey respondents answering questions related to environmental problems or issues to somehow represent the public in a way that could actually be transposed into effective political action (cf. Adorno, 2005 [1965]). If people's opinions and individually oriented actions, such as recycling, have a meaningful political effect on environmental degradation, then how do we explain the positive correlation between increased destruction and growing attention and concern in recent decades?

Is it possible that this research may unintentionally support a homogenizing ideology presupposed by the assumption of 'free' normative action, particularly in American society? The originality of democracy, as Lefort (1988) tells us, is that its legitimacy is rooted in 'the people,' which is at the same time connected to an 'empty space' impossible to occupy; that is, the distinction between legitimacy/illegitimacy is essentially open-ended. Public opinion surveys, on the other hand, are an implicit attempt to unify the social domain by seeking a more or less uniform acceptance of what the social is under the aegis of freedom of opinion. This is not an entire over-exaggeration, for it is worth recalling the fact that 'public' opinion (in the sense I have been using the term) originated as a decision technology for policy formation produced by and for the American Cold War military-industrial complex (Amadae, 2003). In this sense, indicators pointing to the recent rise in public attention and concern for the environment – far from indicating signs of improvement – are actually rooted in ideology and violence.

By not critically reflecting on its own incorporation in social time and space, the values-based approach to environmental sociology produces a positivistic misrepresentation of the 'subjective' dimension of the environment-society problematic severed from its material connections to the 'objective' capitalist system. This approach affirms the ideology of 'free' normative action, which hides the actual divisions between environment and society. In fact, the ideal of a practically meaningful and politically significant relationship between environmental values and behavior is ultimately undermined by the values-based approach itself.

Traditional Marxist Environmental Sociology

Unlike the values-based approach, Marxist-oriented environmental sociology operates with an explicit theory of history. While this should be a welcome relief in light of the foregoing discussion, I contend that Marxist-oriented environmental sociology falls short, insofar as it

remains confined to what Moishe Postone (1993) calls ‘traditional Marxism’, which, as we shall see, takes the relationship between capitalism, environment, and society for granted and treats Marxism as an a priori theory of society. I identify two related shortcomings of traditional Marxist environmental sociology:

- 1) *non-reflexivity* and
- 2) the treatment of Marxism as an analysis of capitalist exploitation and domination within modern society, as opposed to an analysis of the form of modern society itself.⁸

Given the variety of work that may be subsumed under the ‘traditional Marxist’ heading, the following will focus primarily on the work of John Bellamy Foster and his colleagues, whose Marxist-oriented environmental sociology, and his concept of ‘metabolic rift’ in particular, has made a significant contribution to the field in the USA.⁹

Non-Reflexivity

John Bellamy Foster’s concept of metabolic rift is an attempt to conceptualize nature-society interaction within capitalist society, and rooted in his interpretation of Marx as a social theorist concerned with the fundamental metabolism between humans and nature (Foster, 1999, 2000). Foster explains the theoretical premise of his approach as follows:

It was in *Capital* that Marx’s materialist conception of nature became fully integrated with his materialist conception of history. In his developed political economy, as presented in *Capital*, Marx employed the concept of ‘metabolism’ (*Stoffwechsel*) to define the labor process as ‘a process between man and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature.’ Yet an ‘irreparable rift’ had emerged in this metabolism as a result of capitalist relations of production and the antagonistic separation of town and country. Hence under the society of associated producers it would be necessary to ‘govern the human metabolism with nature in a rational way’, completely beyond the capabilities of bourgeois society. (Foster, 2000: 141)

The concept of metabolic rift advances several propositions. First, ecosystems are characterized by complex relationships of interchange that aid in their regeneration and continuance. Second, the labor process constitutes a dialectical, metabolic relation between humans and the biophysical environment; the economic system can be characterized as a social metabolic order. Third, an economic system predicated on constant growth, and reproduction on larger scales, undermines natural cycles and processes. From this, the social metabolism is increasingly separated from the natural metabolism, producing metabolic rifts in natural cycles and processes. Finally, technological development employed to increase productivity intensifies the metabolic rift.

While these propositions are potentially significant for environmental sociology, we must be careful about ascribing the theory of metabolic rift to Marx, since he did not use this terminology, and was not driven to develop a theory based on such terminology. The issue here has less to do with the ‘correct’ interpretation of Marx and more with whether or not Foster’s theory of metabolic rift risks reducing the complexity of nature-society dynamics to a static, rigidified, and anachronistic form of scientific dialectics. Adorno (1974: 268, cited in Cook, 2011: 25–26), for example, contends that Marx did not develop a theory of humanity-nature metabolism, and for philosophically sound reasons. According to Adorno, the absence of a scientific theory of humanity-nature metabolism in Marx may have been an intentional analytic move on Marx’s part in order to indicate that ‘nature’ is irreducible to the human conception of it (Cook, 2011: 26). Perhaps because of

this, and as Cook (2011: 25) points out, Foster does not recognize that his own concept of metabolic rift requires interpreting Marx's mention of natural history in the preface to the first edition of *Capital* as alluding to capitalism as first – not second – nature. Adorno, on the other hand, shows the concepts 'history' and 'nature' as both thoroughly dialectical. Juxtaposing these two concepts, he thereby sheds light on a historical dynamic in order to critique the present. Susan Buck-Morss's (1977: 56–57) gloss on Adorno's idea of natural history is particularly apt in this regard: 'if the biophysical takes the appearance of an ontological first, or a static permanence, then history severs this illusion. If history appears as linear progress, then history as an extension of "first nature" illustrates modern society's severance from the biophysical as a form of contemporary destruction and domination.'

Foster's appropriation of the concept of nature may also be reflective of a more general aversion on behalf of American environmental sociologists to 'constructionism', which is sometimes viewed as constituting a threat posed by European and 'postmodern' environmental sociologists to the mainstream American commitment to 'scientific realism'. For example, addressing his American colleagues on the 25th anniversary of US environmental sociology, Foster writes:

Environmental sociology in Europe tends to be influenced to a greater extent by postmodernist theory and to take a more cultural/constructionist direction. Such radical constructionism often resembles, in certain ways, the human exemptionalism of the past. Partly for this reason, U.S. environmental sociology, which is predominantly realist, has had relatively little influence within Europe, and the spread of postmodernist environmental sociology predominantly from Europe often appears as a threat to what has been achieved here ... Once we abandon realism, our capacity to deal with the real ecological crises arising out of the dialectical interaction of nature and society are [sic] much reduced. (2005a: 57)

The irony of this defense, especially for Marxist-oriented environmental sociology, is that it is anti-materialistic, insofar as it relies on a wholly abstract concept of 'nature'. 'Nature' must be understood in terms of Marx's concept of alienation, which in turn demands an understanding of the dialectical reciprocity of the biophysical environment and production (see Mészáros, 2005 [1970]: 116). In this sense, nature does not refer to external, or transhistoric 'nature,' but to a process whereby capitalist production works in and through both the biophysical, or so-called 'external nature', and the human body/consciousness, or so-called 'internal nature', thereby transforming both (see e.g. Horkheimer and Adorno, 2002 [1947]). This reflexive approach is not necessarily at odds with Foster's 'objective' analysis of capitalism's destruction of the environment. However, because Foster divorces Marx's 'scientific' approach from his overall critical theory of modern society, he is unable to go the extra step to show the powerful role played by capitalist production in shaping the possibilities of subjective experience,¹⁰ and is therefore unable to grasp the concept of metabolism in Marx (*Stoffwechsel*) as referring to a process of co-evolution between nature and history (Cook, 2006, 2011).

Marxism as an Analysis of Capitalist Exploitation and Domination within Modern Society

Related to this lack of reflexivity is the traditional Marxist treatment of Marxism as an analysis of exploitation and domination within modern society, as opposed to an analysis of the form of modern society itself (Postone, 1993: 66). Foster and his colleagues Clark and York (Foster et al., 2010) illustrate the problematic nature of such an approach quite well when they combine the concept of metabolic rift with the so-called 'Lauderdale Paradox', constructing a meta-theoretical amalgam they contend is not too dissimilar from an ecological reading of Marx's distinction between

use-value and exchange-value, which Foster and his team then apply to critique the shortcomings of orthodox economics.

The 'Lauderdale Paradox' is derived from the work of James Maitland, Earl of Lauderdale, who in 1819 distinguished between 'public wealth' and 'private riches'. As ecological economist Herman Daly (1998: 22) notes: 'Lauderdale called attention to the paradox that private riches could expand while public wealth declined simply because formerly abundant things with great value but no exchange value become scarce, and thereby acquired exchange value and were henceforth counted as riches.' Put simply, the so-called 'Lauderdale Paradox', as employed by Foster and his colleagues, is shorthand for the idea that there is an inverse correlation between public wealth and private riches, which means that if things such as air and water are given exchange value, then these items will be diminished at the expense of the public wealth (Foster et al., 2010: 55).

Foster does not explicitly endorse public distribution over private appropriation, to be sure. Indeed, he has been advocating what he calls 'ecological revolution' for the past few years (see e.g. Foster, 2005b, 2009). Yet, his Marxist critique of capitalism, albeit with an environmental twist, is rooted in a traditional Marxist understanding of the labor theory of value, framed in terms of a critique of private property and the market, that is over-simplistic, superficial, and distorting. For example, Foster's aforementioned ecological critique of neoclassical economics is rooted in his argument that the capitalist market valuation of nature is fundamentally inadequate and anti-ecological (Foster et al., 2010; see also Burkett, 1999, 2006). The only reason the environment has so easily become a lucrative field of capitalist investment geared toward sustainability is because of 'a *distorted accounting deeply rooted in the workings of the system* that sees wealth entirely in terms of value generated through exchange' (Foster et al., 2010: 53, emphases added). But given that this is indeed the case, it seems rather self-defeating to assume that Marxist-oriented environmental sociology should be geared towards showing the system as flawed, as if to tell the so-called 'neoliberals', 'I told you so.' Instead of identifying capitalism's exploitation and domination with particular individuals and/or groups, a more useful analysis would direct our attention away from particular individuals and groups and toward the form of society guided by the logic of capital itself. For it is *not* the case that if only individuals were simply informed of capitalism's destruction of the earth they would then recalibrate their self-identity and live a different, more ecologically friendly life. From the perspective of capital – the defining logic of modern societies – the production of value *is* rational.¹¹

Foster and his collaborator Paul Burkett have attempted to debunk the narrative that Marxism is unconcerned with ecology (Burkett, 1999, 2006; Burkett and Foster, 2006; Foster and Burkett, 2004) and their efforts have made a significant contribution in this regard. According to Burkett (2006: 130): 'It is one thing to point out formal contradictions between nature's material forms and capitalism's monetary and market forms; it is quite another (but equally necessary) to establish tensions between capitalism's own material requirements and the reproduction of natural wealth. The latter task demands that the ecological critique of money and markets be grounded in a critique of wage-labour and capital.' But notice that the object of analysis for both Foster and Burkett is private property and the market, which is then critiqued from the standpoint of labor. The problem with this approach is that it fails to grasp the *coercive* aspects of labor, which under capitalism structure a form of abstract domination that penetrates into the very nature of what the social is.

Employing Postone's (1993) distinction between 'traditional' and 'critical' Marxism, we can further specify the shortcomings of traditional Marxist environmental sociology. As indicated, the traditional approach assumes the standpoint of the proletariat as the normative and historical basis for the critique of capitalism. This critique, however, is essentially positive in that it affirms the structure of labor already in existence. The implications of this affirmation become strikingly clear

when we consider the issue of social change. Postone (1993: 66) explains the traditional Marxist approach to this issue as follows: ‘the capitalist class is to be abolished in socialism, but not the working class; the private appropriation of the surplus and the market mode of distribution are to be negated historically, but not the mode of production.’

In contrast to traditional Marxism, and as Postone (1993) has convincingly argued, value is not *necessarily* tied to a historically specific mode of distribution.¹² Rather, value is a historically specific form of social wealth, which means the labor that constitutes value is historically specific as well. The determinateness of alienated labor as such cannot therefore be captured in terms of concrete forms of exploitation and domination *within* modern society, nor can this dynamic be understood by relying on an undifferentiated notion of ‘labor.’¹³ The critical Marxian approach put forth by Postone, on the other hand, grasps the historical specificity of labor under capitalism as structuring a form of abstract social domination, which in turn allows us to scrutinize the form of modern society itself.

Like the opposition of use-value and exchange-value expressed as two poles of a contradictory unity – which acquire immediacy in the commodity – the labor embodied in the commodity possesses this double character in the form of abstract value-creating labor and concrete useful labor (Marx, 1976 [1867]: 131–137). This so-called ‘double character’ is a defining feature of labor under capitalism as *commodity-determined labor*: it consists of isolated individual labor while simultaneously assuming ‘the form of abstract generality’ (Marx, quoted in Postone, 1993: 47). As a particular use-value, the commodity is the product of a particular concrete labor; as a value, it is the objectification of abstract human labor (Marx, 1976 [1867]: 125–131; Postone, 1993: 154).¹⁴ Despite the ‘critical’ efforts of traditional Marxism, socio-ecological domination under capitalism is impossible to grasp in terms of objective appearances alone because, under capitalism, concrete labor as a ‘first order mediation’ (i.e. the self-mediation of humanity with nature) interacts with abstract labor as an alienated ‘mediation of the mediation’ (Mészáros, 2005 [1970]: 79), thereby transforming both.

Socio-ecological domination in contemporary capitalist society cannot be understood simply by pinpointing the anti-ecological character of the market (e.g. the inability of the market to express the ‘value’ of the biophysical). Insofar as Marxist-oriented environmental sociology roots its critique of capitalism in an affirmation of the existing structure of labor, it is unable to capture reification as a thoroughly *social* process of mediation.¹⁵ The paradox of increased global ecological despoliation amid widespread attention and concern during the latter half of the 20th century must be discerned at the theoretical level because it cannot be captured directly at the level of immediate experience, nor can it be grasped with reference to processes taking place at the ‘surface level’ of social reality. That is, we cannot adequately understand this paradox by solely relying on the objective facts of actual ecological destruction. We must also be able to take into account the synchronous development and reciprocal interaction of the subjective dimension of the environment-society problematic. So although Foster’s claims that the only solution to the environment-society problematic is a socialist ecological revolution may be correct – including the proposition that ‘objectively’ the only conceivable solution to present problems would be a successful socialist revolution in terms of stated goals – this does not, however, mean that such stated goals are a possibility (see Foster, 2005b, 2009).

Sociobiophysicality and the Necessity of Critical Theory

The underlying dynamics fueling the paradox of increased environmental degradation amid widespread attention and concern following World War II must be understood at the theoretical level

with reference to alienation and reification, which mediate the reciprocity between the objective dimension (i.e. actual human-ecological transformation through labor) and the subjective dimension (i.e. our perception and understanding of the natural environment) of the environment-society problematic. Although non-identical, these two dimensions appear unified under the logic of capital. One of the key tasks for environmental sociology, then, and one of the areas where critical theory promises to make a distinct contribution, is the development of a theoretical framework capable of grasping the interplay between the objective and subjective dimensions of the environment-society problematic. For critical theory not only understands the conditions for the subjective/objective severance as necessary but not sufficient; this approach also indicates why such an understanding demands the negation of these conditions in order to transform them. Given that a full elaboration of critical theory and its contemporary relevance is well beyond the scope of this article, I will concentrate on two key contributions of early Frankfurt School critical theory, namely, reflexivity and immanent critique of ideology, which are particularly relevant to environmental sociology.

The Frankfurt School Revisited

It is unlikely that the first generation of critical theorists (Adorno, Marcuse, Benjamin, Horkheimer, among others) would have developed the kind of socio-historical reflexivity they engaged had it not been for the social and historical conditions in Germany during the 1920s and 1930s. The experience of the period between the two World Wars required these theorists to develop a theoretical perspective on social reality that was sufficiently critical and self-reflexive. The early Frankfurt School theorists were driven by the need to understand the ways in which the working class in Germany shifted to the political right instead of the left, as traditional Marxists would have expected. Throughout the 1940s, it became increasingly clear to these thinkers that there was no direct correspondence between socio-economic contradictions and class action. They viewed the rise of National Socialism in Germany and the lapse of the Soviet Union into Stalinism as a demand for the fundamental reconstruction of Marxism (Morrow and Brown, 1994: 15).

Central to the Frankfurt School reconstruction of Marxism was the availability of Marx and Engels's early manuscripts, which were reconstructed and published in German in 1932 (Morrow and Brown, 1994: 91). Keeping with Marx's materialism, the Frankfurt School theorists combined the concept of alienation with Lukács's concept of reification, on the one hand, and Weber's notion of instrumental rationality with Freud's insights into processes of socialization, on the other, in order to better understand and acknowledge the contradiction between modern democratic society and the actualization of human freedom. This theoretical reconstruction marked a decisive break from the economic determinism characteristic of vulgar Marxism and classical Marxist theory, and grounded social research in an uncompromising recognition of the limits of the Enlightenment project coupled with an acute awareness of the centralization and concentration of the means of mass manipulation (see e.g. Horkheimer and Adorno, 2002 [1947]; Marcuse, 1991 [1964]).

Early Frankfurt School critical theory represents one of the few traditions of social theorizing that developed out of and remained committed to a sufficient degree of self-reflexivity. Max Horkheimer provided the methodological program for such an intrinsically self-reflexive approach to theory and social research in his 1937 essay, 'Traditional and critical theory'. For Horkheimer, 'traditional' theory presupposes society as separate from observation and the activity of social research – not only as a possibility, but as something desirable. Scientific activity, from a traditional theoretical perspective, is seen as taking place alongside all other activities in society, '*but in no immediately clear connection with them*' (Horkheimer, 1972 [1937]: 197, emphases added),

which means that data can be collected and tested accordingly. This information can then be *used* to yield valid prediction of future events related to the same phenomena. It is perhaps not surprising that the traditional approach to knowledge production emphasizes applicability, whose aim as such is the output of more and more science/knowledge, which exercises an inherently positive social function.

The critical theoretical approach, on the other hand, recognizes the necessary entwinement of history and knowledge and emphasizes the limitations the former places on the latter. It sees the socio-historical object of sociological analysis, namely, modern society, as inseparable from the socio-historical reality of the researcher's milieu, which in turn defines reality perceived (Horkheimer, 1972 [1937]). For Horkheimer, this interplay between individual and society literally shapes the perceptual organ itself, which poses a conundrum for the positivist claim that scientific explanation alone leads to valid predictions of future events related to the same phenomena. For critical theorists, the identification of individual and society is marked by tension, insofar as the latter is not created through collective agency, but rather produced by the world of capital (Horkheimer, 1972 [1937]: 207–208). The critical theorist's conceptual apparatus is characterized by this tension as well. That is to say, although critical theory uses concepts to interpret society 'exactly as they are interpreted in the existing order, [regarding] any other interpretation as pure idealism' (Horkheimer, 1972 [1937]: 208), it also *refuses to accept this order*.

The influence of so-called 'Hegelian-Marxism', especially the immanent critique of ideology, is central to understanding the early Frankfurt School notion of critique. The immanent critique of ideology, as Nicholson and Shapiro explain in their introduction to Adorno's (1993 [1963]: x) book on Hegel, is the core of the critical approach: 'Truth is attained by unfolding both the truth content and the contradictions of thought through linking it to the truth content and contradictions of its social context and commitments.' The emphasis on social contradictions within a historically specific totality affords a perspective into the dynamic and potentially regressive tendencies inherent in the historical 'development' of modern capitalist society, which in turn demands the negation of these conditions in order to transform them.

This context-transcendent moment, or what Strydom (2011) calls 'immanent transcendence', is essential to critical theory. Critique, from this perspective, is grounded in the 'accumulated historical potential' of human agency, which critical theory then seeks to make apparent so that this potential is or could be achieved to some extent accordingly through social practices (Strydom, 2011: 135). The relation between immanence and transcendence, as Strydom (2011: 104) notes, must be registered in a dimension of potentiality seated deep in social reality: 'This deeper dimension of social reality would be an abiding form of human engagement, experience, interests or practices which simultaneously makes social reproduction possible and points beyond all forms of social organization so that it time and time again, not just here and now in the present, gives rise to situation-transcending claims.' As such, the context-transcendent moment of immanent critique of ideology explodes the theory/practice dichotomy, connoting what Celikates (2012) refers to as 'critique as emancipatory practice'.

Sociobiophysicality

In order to further a critical theory of the environment in line with the critical framework outlined above, I advance the concept of *sociobiophysicality* (SBPh), which underscores the reciprocal need of both the subjective and the objective dimensions of the environment-society problematic, where the meaning of the subjective implies the meaning of the objective and without which both are meaningless (Adorno, 1998). The objective/subjective severance of the environment-society problematic

may then be reconceptualized as ‘the inner composition of elements of nature and elements of history within history itself’ (Adorno, 2006 [1964/65]: 116). As an effort to grasp a dialectic of these two dimensions in their mutual mediations (a dialectic which itself is constituted historically), the concept of SBPh must be immersed in its ‘object’ of study as a historical *experience* whose contradictions and tensions are entwined with those of the thought attempting to comprehend it.¹⁶

The concept of SBPh is therefore derived from an understanding of alienation and reification as key processes of mediation constituted by the capitalist mode of production. For an initial definition of ‘mediation’ see Dahms (forthcoming). In addition to estranging humans from self, nature, others, and consciousness, the dynamics of alienation simultaneously *rewrite reality* so as to inhibit these very same humans from consciously recognizing that this is indeed the case. Stated differently, alienation is an inherently dynamic process that structures forms of social mediation between social subjectivity and social objectivity, which, in turn, constitutes concrete forms of social practice in space-time (Marx, 1988 [1844]; see also Dahms, 2006a; Lukács, 1973 [1919], 1980; Mészáros, 2005 [1970]; Postone, 1993). This includes the relations between people as well as the relations between people and the biophysical environment. Alienation must be understood dialectically, as people are both the producer and product of alienated socio-ecological relations.

The concept of reification is primarily derived from Lukács. Translated from German, reification (*Verdinglichung*) literally means ‘thing-ification’. Although awkward, this translation is instructive nonetheless, for it signals an apathetic distance from that which makes us social.¹⁷ More specifically, reification refers to the shaping of human subjectivity in accordance with the objective commodity form. As the guiding motif of his oeuvre, the concept of reification is illustrative of Lukács’s attempt to move beyond – by way of his reading of Hegel – the subject-object dualism that continues to plague post-Kantian philosophy and social science. The process of reification, according to Lukács, refers to ‘the adjustment of one’s way of life, mode of work and hence of consciousness, to the general socio-economic premises of the capitalist economy’ (1971 [1923]: 98). The general socio-economic premises Lukács is referring to here are those of capital and the commodity form. As he explains, ‘the problem of commodities must not be considered in isolation or even regarded as the central problem in economics, but as the central, structural problem of capitalist society in all its aspects’ (Lukács, 1971 [1923]: 83). In other words, the commodity is not simply an economic category; it is thoroughly social and, as we shall see below, biophysical. For only if we realize this ‘can the structure of commodity-relations be made to yield a model of all the objective forms of bourgeois society together with all the subjective forms corresponding to them’ (Lukács, 1971 [1923]: 83).

Lukács’s (1971 [1923]) conclusion, which regarded the proletariat as the identical subject-object, fell victim to the traditional form of theorizing that the critical impetus of his own theory pointed beyond (see Postone, 2003).¹⁸ However, instead of simply discarding Lukács’s approach as a failed, outmoded attempt, I suggest that Postone’s (1993) reinterpretation of Marx’s critical theory may be seen as the critical appropriation of what remains analytically vexing in Lukács’s critique of the commodity form (see also Postone, 2003). This approach allows for an analysis more in line with the dynamics of capitalism at the beginning of the 21st century.¹⁹ In direct contrast to the traditional Marxist approach, whose critique of capitalism is undertaken from the standpoint of labor, Postone’s critical Marxian approach is grounded in the critique of alienated labor. As he explains, ‘That which would be realized in overcoming capitalism, according to the traditional approach, is precisely that which should be abolished, according to Marx’ (Postone, 1993: 48).

The concept of SBPh, which underscores the reciprocity of the subjective and the objective dimension of the environment-society problematic, combines Lukács’s focus on the subjective dimensions of the commodity form with Postone’s categorial interpretation, which, grounded in

the critique of the double character of commodity-determined labor, allows for a dynamic reconceptualization of reification in terms of socially grounded processes of mediation unfolding through space-time. As such, the concept of SBPh allows us to capture both objective socio-structural drivers of human-ecological transformation and our subjective perception and understanding of the natural environment as synchronous with the historical development of the commodity form. This approach illuminates the constellation of social forces which make up a form of abstract socio-ecological domination that effectively operates in and through actual ecological destruction while recognizing these processes as simultaneously shaping the possibilities of our subjective experience. The concept of SBPh is significant for environmental sociologists because it allows us to identify the social mediations that structure the synergy between actual human-ecological transformation and our perception and understanding of the natural environment. Critical theory is necessary if research efforts aimed toward ameliorating the current rate of destructiveness are to be undertaken in such a way that does not perpetuate related problems.

Reification and the Production of Value

The critical Marxian approach put forth by Postone (1993) demands that we reexamine the socio-ecological tensions underlying the fundamental contradiction between value and 'real wealth' in capitalist society. In *Grundrisse*, Marx (1974 [1857/58]: 705) explains how the persistence of value as a measure of material wealth produced remains a necessary structural precondition of capitalist society, even though the potential embodied in the forces of production increasingly renders production based on value obsolete (Marx, 1974 [1857/58]: 704–711; see also Postone, 1993: 25). Postone (1993: 27) explains that because production remains tied to value where labor time is the sole measure of wealth, the abolition of value would signify the end of (capitalist) labor (see also Marx, 1974 [1857/58]: 704). The contradiction between wealth and value therefore points toward capital's *historically determinate* and dynamic socio-ecological domination. However, because the labor time that serves as the measure of value is not individual and contingent, but rather social and necessary, it forms an objective totality whose coherence then becomes sensuous reality (Mészáros, 2005 [1970]: 87). Following Postone (1993), this abstract social domination is structured by labor, insofar as the double character of labor under fully developed capitalist society is understood as structuring forms of social practice, which, embodied in and mediated through the commodity form, is simultaneously abstract and concrete. That is to say, under fully developed capitalism, where surplus value is the dominant form, labor is both a productive activity and a socially mediating activity (Postone, 1993).

As a primary form of social mediation *and* abstract socio-ecological domination, the objectification of abstract labor is a necessary structural precondition for the capitalist production of value. As reification *à la mode*, this abstract social domination is not experienced as such in everyday life. It is therefore important that we analytically distinguish between the transformation of the objective dimension of the environment-society problematic (i.e. actual human ecological transformation of the biophysical via labor), on the one hand, and the subjective dimension of the environment-society problematic (i.e. our perception and understanding of this transformation), on the other. As Postone notes:

In capitalism, both moments of people's relation to nature are a function of labor: the transformation of nature by concrete social labor can, therefore, seem to condition the notions people have of reality, as though the source of meaning is the labor-mediated interaction with nature alone. Consequently, the undifferentiated notion of 'labor' can be taken to be the principle of constitution, and knowledge of natural reality can be presumed to develop as a direct function of the degree to which humans dominate nature. (1993: 222)

As mentioned, early Frankfurt School critical theory exemplifies a level of socio-historical reflexivity capable of acknowledging the necessary reciprocity between the subjective and objective dimensions of the environment-society problematic while at the same time recognizing their distinction. Engaging this dialectic is necessary in order to pinpoint alienation and reification as key mediating processes between the subject-object dimensions. For if environmental sociology fails to grasp alienation and reification, the distinction between the subjective and the objective becomes unrecognized and conflated in the commodity form, and thereby subsumed under the identity principle of exchange society. In this sense, the notion of an unmediated relationship between people's transformation of the biophysical world and our perception and understanding of this transformation not only fails to recognize these two moments as non-identical; this notion also perpetuates the contradictory dynamic of capital, insofar as it fails to recognize alienation and reification as structuring concrete social practices which produce and reproduce the subjective/objective severance in space-time.

According to Postone (1993: 191), Marx's category of socially necessary labor time 'expresses a general temporal norm resulting from the action of the producers, to which they must conform.' Or, put differently, 'Socially necessary labor time is the temporal dimension of the abstract domination that characterizes the structures of alienated social relations in capitalism' (Postone, 1993: 191). Socially necessary labor time has an additional social necessity because, insofar as surplus value is the dominant form in fully developed capitalism, the social whole 'is structured by value as the form of wealth and surplus value as the goal of production' (Postone, 1993: 302). Hence, the opposition of the category of value and material wealth illustrates 'a form of social life in which humans are dominated by their own labor and are compelled to maintain this domination' (Postone, 1993: 302). The possibility and ground for Postone's critique of alienated labor is located in these double-sided social forms, rather than between these social forms and 'labor' (Postone, 1993).

One of the most provocative and potentially useful aspects of Postone's approach for environmental sociology is his explication of how the interrelations between the subjective/objective and abstract/concrete aspects of capitalist social forms effect 'an immanent dialectical dynamic' between productivity and value, which he contends is at the heart of Marx's analysis of the dynamic of capital. Here the temporal aspect of productivity and value is conceptualized alongside the two dimensions of the commodity form. The magnitude of value – that is, the quantitative measure of the objectification of abstract labor (i.e. socially necessary labor time) operates at the level of society as a whole, as mentioned above (Marx, 1976 [1867]: 135; Postone, 1993: 289). However, the use-value and value dimensions do not simply form a static opposition (cf. Lukács, 1971 [1923]). Rather, both dimensions interact through an ongoing 'process of reciprocal determination', effecting 'a directional dynamic in which ... concrete labor and abstract labor, productivity and the abstract temporal measure of wealth, constantly redetermine one another' (Postone, 1993: 290). This 'ongoing pattern of social transformation and reconstitution', according to Postone (1993: 290), is perhaps the best estimate of a so-called Marxian 'law of value'.²⁰

Although in fully developed capitalism, relative surplus value is acquired by way of increasing levels of productivity, and although increases in productivity turn out greater quantities of material wealth and reduce socially necessary labor time, these developments do not change the total value produced per abstract time unit (i.e. labor expenditure as measured by the independent variable, abstract time) because the 'constant' time unit itself is a dependent variable, whose determination is dictated by the concrete use-value dimension of labor. Postone analyzes the category of time itself as a commodity whose abstract and concrete dimensions interact with the abstract and concrete dimensions of labor to transform and reconstitute capital's social totality. The insidiousness of this process, as Postone explains, is continuously enacted by way of a particular 'treadmill effect':

Increased productivity increases the amount of value produced per unit of time – until this productivity becomes generalized; at that point the magnitude of value yielded in that time period, because of its abstract and general temporal determination, falls back to its previous level. This results in a new determination of the social labor hour and a new base level of productivity. (Postone, 1993: 289)

This means that the amount of surplus value furnished can never approximate the amount of the total value produced per unit time. In Postone's account, Marx's analysis indicates that:

The more closely the amount of surplus value yielded approaches the limit of the total value produced per unit time, the more difficult it becomes to further decrease necessary labor time by means of increased productivity and, thereby, to increase surplus value. This, however, means that the higher the general level of surplus labor time and, relatedly, of productivity, the more productivity must be further increased in order to achieve a determinate increase in the mass of surplus value per determinate portion of capital. (Postone, 1993: 310–311)

Thus, whereas accelerating rates of increases in productivity simultaneously yield increased quantities of material wealth, surplus value (the goal of capitalist production) is increased only indirectly: '*in the society in which the commodity form is totalized, there is an underlying tension between ecological considerations and the imperatives of value as the form of wealth and social mediation*' Postone (1993: 313, emphases added). Moreover, as the passage above indicates, the expansion of surplus value necessitated by capital illustrates a specific proneness toward the acceleration of increases in productivity (Postone, 1993: 311), which in turn necessitates a virtually exponential increase in the quantity of biophysical throughput.

Conclusion

Postone's potential contribution to environmental sociology is difficult to exaggerate. His critical Marxian framework shows that in order to effectively capture the socio-ecological tensions underlying the production of value, we must analyze the capitalist production of value as rooted in the abstract objectification of human and non-human domination. The production of value has not been dealt with adequately in either mainstream ecological economics or traditional Marxist environmental sociology, and I would suggest the approach put forth by Postone as a way of remedying this deficit. Postone's analysis of the trajectory of capitalist production also pinpoints the possibility that people may become conscious of – rather than being controlled by – the world they create.

The concept of SBPh incorporates Postone's analysis of the basic social forms of capitalist society as simultaneously concrete and abstract; simultaneously subjective and objective, thereby allowing us to illuminate both the objective dimension (i.e. actual human-ecological transformation via labor) and the subjective dimension (i.e. our perception and understanding of 'nature') of the environment-society problematic as synchronous with the historical development of the commodity form. Keeping in mind the reciprocity of both dimensions, it is important to recall (à la Adorno) that the objective dimension literally shapes the possibilities of the subjective dimension.

Against this background, and using the concept of SBPh, we can rethink the paradox of increased environmental degradation amid widespread attention and concern during the latter half of the 20th century by analyzing the social constitution of subjectivity and objectivity – that is, by examining the synergy of structure and practice in terms of the dynamic and contradictory nature of capital (see Postone, 1993: 224). We can then explain the synchronous development of *objective*

human-ecological transformation and contemporary ecological *subjectivity* after the Second World War as an expression of ‘the social constitution and historical development of needs and perceptions – both those that tend to perpetuate the system and those that call it into question’ (Postone, 1993: 224). On this basis, both the post-World War II American model of economic ‘growth’, as well as the recent discussions of so-called ‘de-growth’, are elucidated as a projection of historically specific circumstances. Specifically, the Cold War configuration of economy, society, and state that impelled an unprecedented global flow of capital and an exponential level of resource extraction during the second half of the 20th century, which in turn necessitated new efforts to control human and non-human natures.

The Cold War configuration of business, labor, and government, which is deeply engrained at the beginning of the 21st century (Chomsky, 2003; Dahms, 2006b), can therefore be grasped as ‘the constitution of historically specific deep social structures by forms of social practice that, in turn, are guided by beliefs and motivations grounded in the forms of appearance engendered by these structures’ (Postone, 1993: 224) – namely, global expansion and the growth of ecological knowledge required to control an unprecedented level of resource extraction amid an anxiety-ridden global arena. Assuming there is something to the concept of SBPh, which underscores the reciprocal need of both the objective and subjective dimensions of the environment-society problematic, the interaction of structure and practice in terms of the Cold War configuration of business, labor, and government not only led to historically unprecedented levels of global ecological despoliation – it simultaneously facilitated the contemporary perception and understanding of the natural environment as well, including the development of contemporary environmentalism and the more general growth in concern for the well-being of the biophysical world in recent decades. This provides us with a much more sober perspective – one which relativizes the recent antagonism between ‘growth’ and ‘de-growth’ by locating this opposition in ‘a form of social life dominated by the historical necessity of capital’ (Postone, 1993: 314).

Consequently, it is not possible to conceive of the relationship between society and the biophysical independent of alienation and reification, regardless of the fact that, empirically speaking, this conception has eluded the attempts of most environmental sociologists. The fact that today we are able to perceive the potentially catastrophic effects of human-induced environmental degradation more precisely than at any other point in human history, yet remain incapable of reducing the rate at which this destruction continues to increase, is the most important case in point. The concept of SBPh requires directing our efforts toward the constellation of social forces that operate in and through not only the biophysical, or so-called ‘external nature’, but the human body/consciousness, or so-called ‘internal nature’, as well. This is significant for sociology because it allows us to identify the social mediations that structure concrete human-ecological transformations and our perception and understanding of the natural environment so as to acquire insight into how current environment-society interactions might become less destructive. The scope of related research ranges from the development of a critical theory of the environment to the social-psychologically embodied consequences of the environment-society problematic for individuals and the moral and ethical implications involved. Interdisciplinary work in these and related areas remains important and salient as global environmental problems continue to advance at an increasingly rapid pace – often more rapidly than societal, institutional, and/or individual responses to them can be formed.

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Notes

1. The precise meaning of sustainability in addition to what exactly the concept implies has been the source of confusion and debate (see Amsler, 2009; Luke, 1997).
2. By 'attention' Schnaiberg (1994: 4) was referring to 'verbal, written, and other means of social communication about the natural environment'. Although Schnaiberg addressed this apparent paradox in 1994, his explanation differs drastically from the one I pursue here.
3. The following provides only a brief sketch of the 'official' development of the sub-discipline in the USA initiated by Riley E. Dunlap, William Catton, and others. For a more comprehensive review of the field see Villancourt (1995).
4. Dunlap and Catton (1994), for example, contend that the vitality of environmental sociology itself depends on individual concern for the biophysical environment.
5. For a comprehensive review of the environmental values literature, see Dietz et al. (2005).
6. Since the values-based approach tends to be atheoretical (Stets and Biga, 2003), and because there is a wide variety of diverse claims regarding the exact definition of environmental values (Schultz et al., 2005), I use the term 'values-based' environmental sociology to refer to survey-based opinion research on environmental attention, concern, awareness, and the like (see e.g. Dunlap, 2008; Dunlap et al., 2000; Schultz, 2000; Stern and Dietz, 1994).
7. Statistical analyses of the relationship between environmental attitudes and behavior continue to yield inconsistent results.
8. This is central to Postone's distinction between 'traditional' and 'critical' Marxism (see Postone, 1993: 66).
9. The concept of metabolic rift has been employed in a number of empirical studies that examine actual environmental destruction (see e.g. Austin and Clark, 2012; Longo, 2012). My aim here, however, is to locate various disconnects between actual ecological conditions and subjectivity.
10. Adorno's discussion of the preponderance of the object is especially important in this regard (see Adorno, 1973 [1966]).
11. I am not dismissing the ideal of reason itself, to be sure. A more adequate understanding of the relationship between structure and practice, as we shall see below, can be gleaned from a critical appropriation of Lukács's concept of reification.
12. 'Once fully established socially, it [value] can be distributed in various ways' (Postone, 1993: 45). This would include non-market modes of distribution, such as planning.
13. Following Postone, I use 'labor' in quotes to indicate a transhistoric conception of labor as the metabolism between humanity and nature. For Postone, the explanatory power of this over-general conception of labor is rather narrow, and he insists that we root our analysis in terms of the historical specificity of capitalist labor, namely, its double character.
14. Although I am unable to provide an adequate exposition of Postone's reinterpretation of Marx's critical theory of modern society within the confines of this article, it is important to note the distinction between Postone's categorial analysis, which he contends is in line with Marx's critique of political economy, and the categorial analysis of traditional Marxism. Postone's categorial interpretation analyzes the double character of labor in capitalism as constituting 'the basis for a historically specific, abstract, and impersonal form of social domination' (Postone, 1993: 30), which underlies the fundamental contradiction between value and wealth (or 'real wealth'). A categorial interpretation, on the other hand, posits 'an undifferentiated notion of 'labor' as the source of value without having further examined the specificity of commodity-producing labor' (Postone, 1993: 55). This is characteristic of traditional Marxist

approaches grounded in a 'class-centered' interpretation and understanding of capitalism. The significance of labor's double character will become more apparent in my discussion of reification and the production of value below.

15. The traditional conception of reification, as illustrated by Lukács (1971 [1923]), views reification as the covering up of true social nature, as embodied in productive capacities of the proletariat. To anticipate my argument below, the issue of the relationship between ontology and anthropology appears in a new, more productive light once we understand alienation as 'the origin and the conceptual core of reification' (Vogel, 1996: 34).
16. This is a tall order, but it is no more than what is required for environmental sociologists to do justice to their object of study. Although I am unable to elaborate this issue within the confines of the present article, Adorno's negative dialectics stand out as significant for environmental sociologists – not necessarily because environmental sociologists can, or should 'apply' *Negative Dialectics* directly, but because Adorno's ambition exemplifies a level of theoretical rigor that has been unmatched since and which, in light of the nature of the environment-society problematic, is today required more than ever.
17. On the plausibility of Lukács's social ontology, see Joós (1983).
18. Lukács was aware of and later sought to overcome this shortcoming (Lukács, 1978a, 1978b, 1980).
19. For assessments of Postone's position, see *Historical Materialism* 12(3) (2004).
20. As CRL James (1947) aptly put it: 'Dialectic for Hegel was a strictly scientific method. He might speak of inevitable laws, but he insists from the beginning that the proof of dialectic as scientific method is that the laws prove their correspondence with reality. Marx's dialectic is of the same character ... he ridiculed the idea of having to 'prove' the labour theory of value. If the labour theory of value proved to be the means whereby the real relations of bourgeois society could be demonstrated in their movement, where they came from, what they were, and where they were going, that was the proof of the theory. Neither Hegel nor Marx understood any other scientific proof.'

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