

# INTERVIEW



# MARXIAN ECOLOGY, DIALECTICS, AND THE HIERARCHY OF NEEDS

## Interview with John Bellamy Foster by Dan Swain and Monika Woźniak

### Abstract

*John Bellamy Foster is editor of the Monthly Review and professor of sociology at the University of Oregon. Since the publication of his book *Marx's Ecology* in 2000 he has become one of the most significant voices in uncovering Marx's ecological thinking and developing ecological Marxism. In this interview we discuss his most recent work, the legacy of Soviet environmentalism, the long-running debate over "the dialectics of nature", and the idea of production according to need.*

### Keywords

*Ecology, Marx, Engels, dialectics of nature, needs, socialism, science*

More than two decades ago you refuted popular assumptions about Marx's relation to ecological issues in your book *Marx's Ecology*. In your recent book, *The Return of Nature*, you undertake a similar task in regard to the other founding figure of Marxism, Friedrich Engels. Why do you see it as so important to set the record straight when it comes to the popular views of Engels?

In *Marx's Ecology* and *The Return of Nature* I was not primarily concerned with refuting “popular assumptions about Marx’s relation to ecological issues”, which were of course mainly products of a profound lack of knowledge of Marx and Engels’s thought in this area. As Spinoza said, “Ignorance is no argument”. It thus hardly deserves a direct refutation. Rather the concern was the more affirmative one of unearthing the deep classical historical-materialist ecological critiques developed by Marx and Engels, as well as later socialist ecological thinkers who were influenced by them, thus providing a more complete understanding of this critical line of thought as a whole, as a methodological basis on which to develop a socialist ecology for the twenty-first century.

Marx as we know today was a foundational ecological thinker, not only in relation to his own time but also with respect to our own since crucial aspects of his method have never been surpassed. This acute understanding of ecological contradictions grew out of his fundamental materialist method and was evident in his concepts of the “universal metabolism of nature”, the “social metabolism”, and the “irreparable rift in the interdependent process of social metabolism” (or metabolic rift). This allowed him, in a way that is unique in ecological thought down to the present, to develop a critique of the political economy of capital that focused on both the social and ecological contradictions of the system arising from the mode of production. His analysis in this respect anticipated and, in some ways, influenced the subsequent development of ecological thought. Today, the recovery of his ecological critique has attained a real importance with regard to both theory and practice, giving rise to a powerful socioecological critique of the planetary ecological crisis of the twenty-first century, underpinning the modern ecosocialist movement.

Engels adopted the same fundamental materialist method (if less philosophically sophisticated) as Marx, but their analyses took on somewhat different emphases rooted in the division of labor they adopted in their work. Although Marx was thoroughly immersed in the natural-scientific analyses of his time, and brought this into *Capital* at numerous points, it was Engels who more directly addressed natural science in his *Condition of the Working Class in England* (which was a pioneering work in epidemiology) and later in his *Dialectics of Nature* and *Anti-Dühring*. Engels’s materialism together with his approach to the dialectics of nature propelled his work in an ecological direction. He famously said that “Nature is the proof of dialectics”. While this has often been criticized, what he clearly meant, in today’s terms, was that “Ecology is the proof of dialectics”, a view that takes on new meaning in the twenty-first century. In “The Part Played by Labour in the Transition from Ape to Man” (included in the *Dialectics of Nature*), Engels provided not only what Stephen Jay Gould called the most developed conception of gene-culture evolution (and thus the most advanced understanding of human evolution) to appear in the nineteenth century, he also provided one of the most powerful critiques of ecological destruction to be developed in his time and indeed up to our own.

Engels’s incorporation of Darwin’s evolutionary theory within Marxist analysis was to influence subsequent socialist analyses. His theory of dialectics as constituting what

we now call the “emergence” of new material powers through changing organization forms, or what Joseph Needham called “integrative levels”, was crucial to later work by socialist scientists, and anticipated the development of science in general. His speculations on the origins of the universe, origins of life, the origins of the human species through labor, and the origins of the family were also enormously important for later theoretical developments. The chapter in *The Return of Nature* that focuses on the significance of the Marxist natural-scientific, evolutionary, and ecological tradition embodied in the work of thinkers such as J. B. S. Haldane, J. D. Bernal, Joseph Needham, Lancelot Hogben, and Hyman Levy in the 1930s and '40s is entitled “The Return of Engels” since it was the rediscovery of Engels’s dialectics of nature that constituted the initial basis for many of the revolutionary discoveries of the period, influencing the modern environmental movement.

The point is that the recovery of Engels’s ecological thought, like Marx’s, is not so much about countering popular assumptions, but rather building on and revitalizing a critical analysis that is indispensable for revolutionary theory and practice in our time.

How can this recovery of Engels’s ecological thought change the way we understand the fate of dialectics of nature in the Soviet Union? The belief in a supposedly unbroken line of continuity between Engels and Stalinism still affects how many people in Central and Eastern Europe seem to think about this issue..

The issue of Soviet dialectical materialism is complex. And while I could discuss that at some length, I think it is most useful in this context – since a long disquisition would not be in order – to focus on the ecological aspects, which will get at many of the salient issues.

It should hardly surprise us that in the 1920s up to the mid-1930s the Soviet Union had the most advanced ecological science in the world, encouraged initially by none other than Lenin himself. Moreover, it was inspired in large part by Engels’s dialectics of nature, as well as Marx’s broad dialectical and historical materialism. Even those Soviet-era thinkers who were not Marxist were influenced by the dialectical conceptions emerging at the time. Geophysicist Vladimir Vernadsky developed the notion of the biosphere and biogeochemical cycles; geologist Aleksei Pavlov introduced the notion of the Anthropogene Period (also referred to as the Anthropocene); Bolshevik revolutionary leader and theorist Nikolai Bukharin applied Vernadsky’s concept of the biosphere to historical materialism and explored metabolism as constituting the basis of an equilibrium (although originally seen by him in rather mechanistic terms); biologist Alexander Oparin introduced the modern materialist theory of the origins of life (also developed at the same time by J. B. S. Haldane in England, who was influenced by Engels and Soviet thought); geneticist Nikolai Vavilov discovered the global sources of germplasm underlying the major crops and pioneered in genetics; zoologist Vladimir Stanchinskii was the first to develop a rigorous energetic analysis of ecological commu-

nities and trophic levels, was the editor of the USSR's first formal ecology journal and the leading proponent of the Soviet *zapovedniki*, or ecological reserves; physicist Boris Hessen introduced the sociology of science and explored the significance of Engels's focus on the relations between the transmutation of matter and the transformation of energy; Boris Zavadovsky developed a powerful critique of vitalism in science; Vladimir Nikolaevich Sukachev pioneered in ecological work on swamps that impressed Lenin in this respect. All of this was based on Marxian concepts of dialectical naturalism/materialism.

A number of these figures, namely, Bukharin, Vavilov, Zavadovsky, and Hessen, flew into London from Moscow in 1931 for the Second International Conference on the History of Science and Technology, where they had an enormous influence on socialist scientists in Britain such as Bernal, Needham, Hogben, Levy, and Haldane, leading to the tradition of red science in Britain that is explored in *The Return of Nature*. However, the impact of Stalinism (and Lysenkoism) was reflected in the fact that Bukharin, Vavilov, Zavadovsky, Hessen, and Stanchinskii were all eliminated in Stalin's purges. Their tradition of analysis lived on primarily in the work of the British red scientists who were directly influenced by them and who became what I called at one point a "second foundation" within Marxian natural science.

In the Stalin period dialectical materialism in the Soviet Union was reduced to a set of empty formulae and took various crude forms, including positivism. Nevertheless, there remained authentic dialectical thinkers in the natural sciences (and the arts) concerned with ecology who managed to survive, such as Sukachev, who introduced the notion of biogeocoenosis, constituting in many ways a more dialectical alternative to an ecosystem tied to the concept of the biosphere. Sukachev, at the head of Soviet science, was to declare war on Trofim Lysenko and eventually defeated the latter, which opened the way to the revival of Soviet ecological thought, the resurrection of the *zapovedniki*, and the rise of what I have called "late Soviet ecology" in the late 1970s and 1980s. It is at this time that the Soviet climatologists, notably those surrounding the extraordinary figure of Mikhail Budyko, played the leading role in introducing the notion of accelerated climate change, while also playing a major role in the development of nuclear winter analysis. Soviet scientists and philosophers got together to develop the notion of "ecological civilization", which was later adopted in China. In all of this we can see the power of dialectical-materialist ways of thinking despite attempts to reduce it to a positivistic dogma, the very inverse of itself.

None of this is to deny the ecological failures of the Soviet state. But just as we would not want to judge the value of all ecological and critical thought in the West by the failures of the capitalist system, which is now pointing us toward the complete destruction of the planet as a safe home for humanity and putting the survival of the species in question, we should not discount the contributions of all critical Soviet thinkers on the basis of the errors made in the Kremlin.

### How can this complicated Soviet legacy inform our thinking today?

The answer lies in your reference to “the complicated Soviet legacy”. The Soviet Union (also including Soviet-type societies in general) cannot be treated as simply a monolithic society nor was its history a simple, continuous one. Rather, there were sharp breaks. In writing my article on “Late Soviet Ecology and the Planetary Crisis” in *Monthly Review* in June 2015, I looked at the three periods of Soviet history from an ecological perspective, represented by the period up to the mid-1930s, the core Stalin period beginning with the major purges, and then late Soviet ecology beginning with the thaw in the 1960s. What interested me was that not only was the opening decade and a half in the Soviet Union, as is now well understood, a period of critical ecological advance, but also that this was not entirely destroyed in the Stalin period, and there was a new flowering of Soviet ecology near the end, arising principally out of the sciences. Moreover, the dialectical and materialist forms of thinking to the extent that these persisted led to very creative ecological insights along lines quite different from the West.

In late Soviet ecology there was of course a greater emphasis on the possibilities of ecological planning as part of the overall planning process, which is very important compared to capitalism’s anarchic market approach. And there was a significant unearthing of some of Marx’s ecological ideas. The notion of the creation of an “ecological civilization” represented a kind of thinking that is hardly evident in the West even today. Budyko and the Soviet climatologists around him were in the 1950s and early 1960s the largest group of climate scientists and the most advanced in the world, though this shifted towards the United States by the mid-1960s. The emphasis on the biosphere and on concepts such as biogeocoenosis and biogeochemical cycles gave Soviet ecologists a more integrated Earth System view. It is remarkable even today to read Budyko’s *Global Ecology* from the 1970s and compare it to what existed then in the West. There was something of a socialist ecological humanism that emerged in nascent form at this time.

Of course, there were contradictions because dogmatism still persisted in core areas along with the belief in Promethean megaprojects, such as diverting rivers. But many of the ecological figures in science and philosophy broke decisively with that. The massive Soviet conservation movement was a scientist-led dissident movement that was gaining ground throughout the 1970s and ’80s and resulted in the largest conservation organization in the world. All of this went away, however, with the dissolution of the USSR itself. Since we are rapidly moving under capitalism toward the destruction of the planet as a home for humanity, threatening the demise of civilization and even the possible extinction of the human species, I think it is important to draw some lessons from the ecological scientists in the Soviet Union who tried to envision another way, breaking somewhat with the dominant tendencies of their own society, but also not succumbing to Western capitalism. It is interesting that Chinese Marxists have to some extent drawn on the ideas from this period, such as the notion of ecological civilization.

You criticize the dualism of history and nature in Western Marxism and opt for a nuanced and nevertheless ontological understanding of dialectics of nature. Why do you consider this ontological understanding important and how do you conceptualize the relation between the dialectics of nature and the dialectics of society?

The *differentia specifica* of “Western Marxism” as a philosophical tradition, separating it from other versions of Marxism, is its adherence to neo-Kantianism, wherever questions of nature and society and ontology and epistemology are concerned. Western Marxism had its origins in footnote 6 of Georg Lukács’s *History and Class Consciousness* in which he said that Engels, “following Hegel’s mistaken lead”, had extended dialectics to “the whole nature”, encompassing not only society and history, but external nature too. Yet, “the crucial determinants of dialectics” in the social sense, requiring reflexivity in relation to the human subject, Lukács said, “are absent from our knowledge of nature”. From this arose what has long been regarded as the distinguishing feature of Western Marxism, in its rejection on neo-Kantian grounds of the dialectics of nature. Ironically, Lukács himself did not categorically reject the dialectics of nature. In fact, in a later chapter in *History and Class Consciousness* he indicated, in words similar to those of Engels, his acceptance of a “merely objective dialectics of nature”, while emphasizing that this was limited, and that dialectics in its full dimensions was social and reflexive. Moreover, one of the major themes in his work, following *History and Class Consciousness*, starting with his *Tailism* manuscript just a few years later and extending to his *Ontology of Social Being* at the end of his life, was the development of a dialectics of nature and society rooted in Marx’s concept of social metabolism.

Within the Western Marxist tradition itself, evolving from *History and Class Consciousness* but rejecting the dialectics of nature much more fully than Lukács, there emerged a dualistic view in which the dialectic applied only to history and society and not to the realm of nature, which was given over in its entirety to natural science and positivism. Marxism, therefore, restricted itself to an artificial “totality” that was entirely social and non-natural, divorced from the natural-material world, while excluding from this the physical universe. This conformed to the neo-Kantian view in which epistemology (or the theory of knowledge) subsumed ontology (or the nature of being), on the grounds that we could only really know (or know dialectically) the realm of the human subject and not to any extent the external nonhuman world/universe, a view that critical realist philosopher Roy Bhaskar called the “epistemic fallacy”. Such a perspective, however, was no longer consistently materialist, but tended increasingly to idealist views. The materialist conception of history came to be divorced from the materialist conception of nature. The Vician view that we could understand history because we had made it concealed a dualism in which the larger material world outside of societies was characterized as an *other*, the domain of mechanism and positivism, not Marxism and dialectics. In this view, there was no room within Marxism for a concrete analysis of nature, ecology, or

even Darwinian evolution, which all lay beyond its purview. Hence, Western Marxism was not able to produce any genuine ecological analysis, only an endless rejection of positivism, and an abstract and ambiguous critique of the “domination of nature”. This is not to deny that the Western Marxist philosophical tradition expanded our critical knowledge in many respects. But it was trapped in its own rejection of the material world beyond humanity as a universal *other*, a noumena, or *thing in itself*.

In terms of why I consider ontology important, I would have to go back to my first conscious recognition of this in the 1970s through my encounter with István Mészáros’s *Marx’s Theory of Alienation*, which addressed human social ontology through an emphasis on the human being as the *self-mediating being of nature*. Mészáros of course drew this from Marx’s *Economic and Philosophical Manuscripts* in which Marx, in his critique of Hegel’s *Phenomenology* at the end of the *Manuscripts*, explains that human beings are corporeal beings and thus objective, sensuous, material beings – in the sense that the objects of their needs lie outside of themselves. Through the historical development of production human beings thus become self-mediating beings of nature, also subject to self-alienation.

This is the place where the *Economic and Philosophical Manuscripts* end, but also the place where the *German Ideology* effectively begins, thus suggesting the lack of any epistemological break in Marx’s thought in 1845–1846. It is this ontological view, associated with Marx’s theory of alienation, which is the starting point of historical materialism. But it emerges out of a deep materialist ontology. Beginning in 1850s, under the influence of the work of his friend and revolutionary comrade, the physician-scientist Roland Daniels, author of *Mikrokosmos*, Marx began to conceptualize this ontological relation in production as the social metabolism between human beings and nature, out of which his most fundamental ecological conceptions arose, and which lies at the center of Lukács’s social ontology. I came to understand Marx’s ontological analysis this way early on, in the 1970s, because of my study of Marx’s *Economic Philosophical Manuscripts*, Mészáros’s *Marx’s Theory of Alienation*, Lukács’s 1967 preface to *History and Class Consciousness*, and the 1967 interviews of Lukács in *Conversations with Lukács*. My later study of Marx’s materialism going back to his doctoral thesis on Epicurus, his analysis of ecological metabolism, and Lukács’s *Ontology of Social Being*, simply reinforced these views, which also overlap with Joseph Fracchia’s work on Marx as a theorist of corporeality. Without this ontological conception rooted in Marx’s deep materialism there can be no coherent Marxist critique. Marx saw this ontological view as the inverse of Hegel’s idealistic ontology.

But couldn’t this be compatible with an approach that insists nature is knowable *through* dialectics (for example, because it is part of human history and consciousness), without insisting that dialectics is, as it were, “out there” in nature? What do you think would be lost with this approach?

I often refer to the specific realm of dialectics, involving the direct interaction of nature and society, as the *dialectics of nature and society*, since this is somewhat different from the dialectics of society or the dialectics of nature considered separately. Much of dialectical thought involving both the natural and social world, such as Lukács's *Ontology of Social Being*, can be seen as involving the dialectics of nature and society. But there are obviously aspects of nature – which can be seen encompassing all of natural history and evolution in the universe as a whole – that have existed prior to and beyond the reach of humanity. Ontologically, humanity is part of what Marx called “the universal metabolism of nature”. Our knowledge of the external natural world is the result of our interactions with (and within) this universal metabolism, through what Marx called the “social metabolism” represented by human production. The material understanding derived from these interactions is then extended through scientific inferences to aspects of extra-human nature that are not immediately available to us. Thus, if we go back far enough in the history of physics, all the way to antiquity, we find that the earliest principles with which philosophers understood the universe beyond themselves were all based on scientific inferences arising out of our own immediate material experiences, as they understood them at the time, from which they inferred the “nature of things” in the universe as a whole. The very fact that such an approach to scientific inference has a general validity from the standpoint of logic expresses the fact that nature is not simply “out there” but “in here” as well, in the sense that we are natural-material beings, and thus part of nature, as well as social beings. In fact, human society is an emergent form of nature with its own specific laws, but still subject to nature’s broader laws.

Marx, building on his deep knowledge of Epicurean philosophy, always emphasized the human *sensuous* relation to nature, in which human beings were conceived as objective beings and therefore had their needs outside themselves. And, of course, Marx’s notion of the social metabolism of humanity and nature through production stressed the dynamics of this relation within human history. He saw this sensuous interaction with the world as extended and the knowledge this generated as given rational form within material science. Lukács in his 1967 preface to *History and Class Consciousness* agreed with Engels (and Marx) that, from an epistemological standpoint, humanity can also learn about external nature through scientific experiments. Hence, the Kantian thing-in-itself tends to recede as human production, knowledge, and science proceeds. All of this reflects our growing material knowledge of the natural world of which we are a part, and in all of this a dialectical, relational perspective is crucial.

Still, it remains a reality that the universal metabolism of nature, as Marx called it, necessarily extends beyond human interaction with it, and thus any direct knowledge on our part. It would be both anthropocentric and unscientific to think otherwise. Hominins are only a few million years old, while most of the history of life and the universe precedes us and surrounds us, constituting the larger basis in which we exist. Humans thus exist alongside other forms of life and within the biogeochemical cycles of the Earth System as a whole. Understanding natural relations – which have to be

approached dialectically and not in a mechanical way – thus requires a dialectics of nature, or what Engels and Lukács called the “merely objective dialectics”, separate from direct human consciousness and action, and providing the basis for the more complete dialectic, embodying human consciousness and subject-object relations.

Hegel famously addressed the merely objective dialectic through his notion of “reflection determinations”. Human beings are both an evolutionary product of nature and, as Marx and Mészáros said, the *self-mediating beings of nature*, allowing us to perceive and act upon the world in meaningful, transformative ways. But just because of this we can also say that much of the universal metabolism of nature lies beyond our own corporeal existence, so that a “merely objective dialectics of nature”, in which humanity itself is decentered, is also necessary. The philosophy of internal relations, which is connected to dialectics, is not simply applicable to human history and consciousness but to the natural world as a whole. It was for this reason that Marx in his *Letters to Kugelmann* referred to “the dialectical method”, viewed in its most general sense, as nothing other than “the method of dealing with matter”.

In contemporary debates, it is very common to see arguments that any distinction between humans and nonhuman nature is necessarily dualistic and anthropocentric. What do you see as the limits of that approach? Your own works suggest a more dialectical view.

The type of criticism that you mention has several different forms. One of these relates to the question of distinctions between human and nonhuman animals. Here the dominant Western position arising out of the Enlightenment was Descartes’s famous anthropocentric dualism in which he separated human beings with a soul/mind, on the one hand, from nonhuman animals, who he characterized as mere machines. Descartes went so far as to apply vivisection to his wife’s dog to “prove” that it had no soul. Marx strongly criticized Descartes’s view of animals as machines, insisting that this reflected the alienated, idealist viewpoint of the bourgeois order, arguing that in the medieval world nonhuman animals were seen not as machines but as “assistants” to human beings, a viewpoint with which Marx identified.

Marx was heavily influenced by the Epicurean materialist tradition, by Samuel Reimar’s theory of animal drives, and Darwin’s theory of evolution, all of which emphasized the close connections between human beings and nonhuman animals, departing from the Cartesian dualist tradition in this respect. Indeed, both Marx and Engels attributed most of the higher forms of consciousness and self-consciousness to animals, but understood human labor as a new emergent form, in which human beings, due to their social organization, became the self-mediating beings of nature on a level that was akin to – but qualitatively distinguished from, in terms of society, language, technology, and history – that of nonhuman animals. This was linked to evolutionary theory. In Engels’s “The Part Played by Labor in the Transition of Ape to Man”, one finds not only the highest conceivable estimation of the powers, including

intellectual powers, of nonhuman animals, but also, as mentioned above, the most sophisticated nineteenth century view of gene-culture coevolution, explaining the distinctive evolution of the human species. In this view there are qualitative breaks represented by human evolution, but the connections to nonhuman animals remain within what Darwin called the evolutionary “descent of man”.

In terms of broader criticisms charging Marxism with a dualism of human beings and nature, this is often based on a crude posthumanist rejection of Marxian dialectics as itself dualistic, forgetting that dialectics, and particularly Hegelian dialectics, has as its object overcoming dualism, based on an understanding of contradiction, change, mediation, negation, transcendence, and totality. Conversely, the equally simplistic (and non-dialectical) attempt to treat dialectics as simply absolute unity or a monistic worldview, merely removes the contradictions. As Lukács stated, Marxian dialectics is concerned with “the identity of identity and non-identity”, not with their absolute conflation. Nor is today’s popular hybridism a meaningful substitute for dialectics. In his *Critique of Hegel’s Philosophy of Right* Marx warned against the “unhappy hybrid in which the form betrays the meaning and the meaning the form”.

Some thinkers have gone so far as to criticize Marx’s dialectical theory of metabolic rift itself as dualistic, forgetting that the focus of Marx’s analysis here was social metabolism (the labor and production process) constituting the *mediation* between humanity and what Marx called the “universal metabolism of nature”, that is, nature as a whole. *Mediation* seen in relation to *totality* is of course the core of the dialectical method. In the case of the metabolic rift, we are speaking of a disruption in the metabolism, or an alienated mediation (what Mészáros called “second order mediations”) between humanity and the rest of nature, constituting a fundamental ecological contradiction. This is in fact the dialectical way in which Marx constructed his fundamental ecological critique. To say that this is dualistic because there is humanity on one side and non-human nature on the other is to forget the mediation, that is, metabolism/production, which is the essence of the relation, and the basis of contradiction and change.

As you have indicated, the “metabolic rift” is a crucial concept in your thought. In your book with Brett Clark, *The Robbery of Nature*, you connect this to a “corporeal rift” within the human body itself. How do you understand the relationship between these two rifts? Why do they remain central to understanding our contemporary world?

Marx’s concept of metabolic rift is now so well known to socialist thinkers and activists that it does not require a detailed analysis here. It arose out of Marx’s understanding of the labor and production process as constituting the social metabolism, or the specifically human relation to the universal metabolism of nature. However, since capitalism is based from the start on the twofold alienation of nature and human labor and has as its singular object the accumulation of capital, rifts in the human metabolism of nature are an inherent part of the system. Marx first conceptualized this in terms of the soil

fertility crisis in nineteenth century England, whereby the soil nutrients were removed from the land in the food and fiber sent hundreds and even thousands of miles away to the new urban centers. These nutrients did not return to the land, which required massive attempts to repair this by importing natural fertilizers, such as guano from Peru, followed by the development of artificial fertilizers. From the very beginning, therefore Marxian ecology was based on the notion the disruption of ecological cycles that is inherent in capitalism.

The metabolic rift has often been interpreted as manifested simply in the human relation to nonhuman nature. Nevertheless, human beings themselves, as corporeal beings, are a part of nature and the metabolic rift therefore also applies to the human body. Brett Clark and I therefore introduced the concept of the *corporeal rift* to address this problem. This is in fact consistent with Marx's whole conceptual framework. Thus, Marx, in referring to Engels's *Condition of the Working Class in England* two decades later in *Capital*, argued that the same general phenomenon of the disruption in nature's metabolism represented by the guano trade was also represented by the direct effects on human corporeal existence of the periodic epidemics facilitated by capitalist relations of production. We applied the corporeal rift analysis to explain how capitalism creates rifts in human bodily existence, as in what Engels in his *Condition of the Working Class* called "social murder". This allowed us to investigate in human-ecological terms such concrete historical issues as: (1) the extreme exploitation and shortening of the lives of workers; (2) the role of slavery (for example, the fact, discussed by Marx, that the slave-auction contracts between buyers and sellers of slaves often designated the life expectancy of slaves as no more than seven years); (3) the expropriation of women's labor and bodies associated with capitalist forms of social reproduction; (4) the genocide historically inflicted on Indigenous populations; and (5) the role of pandemics as with COVID-19. *The Robbery of Nature* was particularly concerned with Marx's concept of *expropriation* as underlying the metabolic rift under capitalism, and how that affected human corporeality. The human body, in this view, is a site of ecological and social destruction. Naturally, the issue of corporeality can be applied to animal bodies too, but our goal was specifically to capture the corporeal dimensions of the metabolic rift as they related to human beings.

Should we then see the concept of "corporeal rift" as extending and giving scientific grounding to the notion of alienation as it appears in Marx's early writings, perhaps in a similar way to how you describe the *German Ideology* picking up where the *Economic and Philosophical Manuscripts* left off?

If we look at Marx's discussion in the *Economic and Philosophical Manuscripts*, he proceeds from his famous discussion of the alienation of labor to the environmental and physiological effects of this alienation on human beings. Thus, he writes of the industrial worker: "Light, air, etc. – the simple *animal* cleanliness – ceases to be a need for man.

*Dirt* – this pollution and putrefaction of man, the *sewage* (this word to be understood in its literal sense) of civilization – becomes an *element of life* for him. Universal *unnatural neglect*, putrefied nature, becomes an *element of life* for him.” Marx is here describing a *corporeal rift* in human life resulting from the alienation of labor but extended to the degradation of the entirety of human existence, all that is associated with life.

Interpretations of Marx’s theory of alienation are often too narrow, focusing on the alienation of labor by itself, while failing to recognize the connection of the alienation of labor to the alienation of nature, and, with respect to humanity, the estrangement of human beings from their corporeal organization, as living, breathing beings. It was this relation, which pervades all of Marx’s thought, which led Brett Clark and I to introduce the concept of corporeal rift to get at the metabolic rift as it affects human corporeal organization, recognizing that what we call ecological destruction is properly applied not only to external nature, but to human beings as natural beings as well. And all of this is of course related to alienation in its material dimensions.

Your work argues – with Marx – that the metabolic rift can only be overcome in a society where the associated producers rationally regulate the metabolism between humanity and nature. In this context, how do you see the relationship between scientific knowledge and democratic control? In the current moment, we repeatedly hear calls to “listen to the science” that are combined with a technocratic mindset that is often suspicious of and hostile to democracy. How can we avoid this trap?

A rational science is incompatible with the logic of capital, which also means that science, although often corrupted and formally subsumed under capitalism, can never be absolutely subsumed by capital, and thus it frequently reemerges as an anticapitalist force. It is important to remember that Marx’s *Capital* was a scientific project as well as a critique. Much of *The Return of Nature* is concerned with socialism and the development of ecological science. The method of science in the broadest sense, that is in the way in which Marx and Engels referred to *Wissenschaft* as a system of learning, knowledge, and science, is the intellectual basis of all critique. In the historical materialist view, moreover, major breakthroughs in science tend to come from the bottom and from viewpoints outside the established system – if only because of the irrationalisms imposed on science by bourgeois society, including the role of idealism.

J. D. Bernal’s 1939 *The Social Function of Science* and the social relations of science movement in Britain in the 1930s and 1940s, which was supported by a majority of British scientists at the time, most of whom were on the left, was a major attempt to challenge the system from the standpoint of science. It was Bernal who introduced the phrase “Science for the People” in his 1952 *Marx and Science*. It was in this period that Hogben and Haldane destroyed the genetic theory of race and eugenics in response to the racial distortions of science and ecology by figures like Jan Christiaan Smuts in

South Africa. The modern ecological revolt began in the 1950s when figures like Albert Einstein, Bertrand Russell, Linus Pauling, Bernal, and Barry Commoner organized against atmospheric nuclear testing following the disaster at Castle Bravo. Rachel Carson came out of this same movement in science. Commoner's *Science and Survival*, which raised the issue of global warming in the 1960s, was also part of this struggle. Science for the People movements emerged in the 1970s in the United States and in Britain. In the United States this was associated with such leading radical scientists as Richard Lewontin, Richard Levins, Stephen Jay Gould, and Ruth Hubbard. In Britain, Hilary Rose and Steven Rose played leading roles.

The revolutionary scientific discoveries with respect to climate change were developed by scientists in the Soviet Union and the United States, and immediately generated radical questions about contemporary production. The definitive studies of nuclear winter within atmospheric science over the last thirty years have been opposed by and suppressed by the Pentagon in its own treatments of the effects of nuclear war, but nonetheless the science cannot be denied. Genuine science has self-criticism as its basis, something that runs against the power of ideology.

That does not mean of course that science cannot be corrupted in various ways or manipulated by the system or employed in an elitist and technocratic manner, which is a big part of our reality. But that is exactly why struggles over the social relations of science are necessary. It is therefore extremely important that Science for the People as an organization and also a magazine has been revived in the United States in recent years. Without critical science there would be no science of ecology and virtually no possibility of an effective ecology movement. Marxists who see natural science as inherently technocratic, positivistic, and elitist are in many ways giving up the struggle, which cannot be carried out independently of science. It is worth looking at the very different attitudes toward science in Cuba, as represented by figures such as molecular immunologist August Lage Dávila, e. g., in his article "Socialism and the Knowledge Economy" published in the September 2006 issue of *Monthly Review*.

[And we also see these elitist and technocratic approaches emerging in discussions of COVID-19...](#)

In terms of COVID-19, we do see the manipulation of science by the establishment in various ways, sometimes to cover up failures. But we also see major advances in science coming to the fore. The work of critical epidemiologist Rob Wallace and his associates within Structural One Health, coming out of the historical materialist tradition, have been extraordinarily important in bringing out the historical roots of the pandemic in capitalist global agribusiness and the circuits of capital, as well as the social factors that have led to its disproportionate impact on the most vulnerable sectors of society. We can in fact draw on a long history of socialist contributions to epidemiology from

the time of Engels and Marx to the present – as Brett Clark, Hannah Holleman, and I explained in an article in *Monthly Review* in January 2021 entitled “Capital and the Ecology of Disease”.

In this context, you write about the importance of transcending the capitalist form of value and emphasize the necessity of producing use values that meet genuine human needs. Is there a danger of technocracy when it comes to determining and promoting these needs? To use the language of another hero of *The Return of Nature*, William Morris, how do we determine the difference between “the vast quantity of useless things” produced by capitalism and that which meets real needs?

We live in a technologically mediated civilization, so the danger of technocracy is always something to guard against. But much of this derives from the class-basis and hierarchical structure of our society itself. Socialism in the twenty-first century demands substantive equality and ecological sustainability, both of which militate against hierarchical technocratic structures and capitalist monopolistic market mechanisms. We must remember that our most pressing problems today are not conducive to purely technological or technocratic solutions but have to do mainly with social relations. Widespread education and active control from the bottom of society are key.

In terms of how we determine what are useless things, we have to be able first to analyze how various commodities fit into the structure of production and social needs. This is not as difficult as one might think. Marx was the first to refer to the “hierarchy of needs”, not Abraham Maslow in the 1950s. In his “Notes on Adolph Wagner”, Marx wrote of the “hierarchy of his [man’s or humanity’s] needs”, which can clearly be given “a certain rank ordering”. This starts of course with our bodily needs. In the United States three individuals own more wealth than the bottom 60 percent of the entire population. The inequality is so vast that the so-called “masters of the universe” at the top of the class pyramid have numerous private jets and can take trips into outer space for the thrill of it, while much of the population in the United States lacks clean water, clean air, adequate and nutritious food, housing, access to health care, transportation, decent education, connectivity, etc. Individual acquisition is put ahead of community relations and needs.

It is certainly possible, in a society that emphasizes substantive equality and ecological sustainability, to determine that production should first satisfy the basic needs of all and to move forward from there. Needs, moreover, do not come just in the form of commodities, but in the form of community, social relations, education, health, aesthetic enjoyment, human empowerment, etc. Use values are essentially qualitative and not simply representations of economic value, as in the case of exchange values. William Morris decried the vast waste in society and the fact that people were compelled to carry out useless labor producing useless things and thus waste their working lives away. There is no doubt we can move more in the direction of rational,

ecologically sustainable production, given the extreme forms of waste and destruction in the contemporary economy that exist only to absorb the enormous economic surplus of capitalism and to keep it going. In the United States, trillions of dollars are spent on marketing every year for the purpose of convincing people to buy things, resulting in a situation in which people neither need what they want nor want what they need.

Could we say then that democratic control from below is itself a need, or perhaps that it is a necessary requirement for articulating and identifying our needs for social relations, community, empowerment, etc.?

I agree with this in general terms, but such “democratic control from below” is impossible under capitalism. Nor, clearly, was it achievable in Soviet-type societies. From a long-range socialist perspective, it will be necessary to return to the notion of the “withering away of the state”, viewed as a hierarchical structure standing above society. In his recently published posthumous work *Beyond Leviathan: Critique of the State*, István Mészáros calls for the “progressive requisition of the alienated powers of decision-making” by society as a whole as represented by the “self-managing freely associated producer”.

In recent years it feels like politicians and theorists of the radical left have finally begun to catch up with the climate crisis, and there is a lively debate about both strategy (green new deals, degrowth, climate jobs, ecological Leninism) and tactics (direct action, electoralism, etc.). Where do you see the most hope for repairing the metabolic rift today?

In terms of “theorists of the radical left finally catching up with the urgency of the climate crisis”, it is important to understand that thinkers on the left were leaders with respect to addressing the climate crisis as far back as the 1960s and 1970s. One can point to socialists like Barry Commoner, Virginia Brodine, Charles Anderson, even Jürgen Habermas, who emphasized the dangers of climate change in the late 1960s and '70s. Anderson’s book, inspired in part by Commoner, was entitled *The Sociology of Survival* and took global warming seriously. Of course, the greater part of the left ignored the question at the time, as did society as a whole. Still there is no sense in which socialist thinkers were behind in the development of ecological ideas, which arose particularly from the left.

I dealt with climate change and the whole question of the disruption of the earth’s ecological cycles in my book *The Vulnerable Planet* in 1994 and have expanded that analysis ever since. Climate change of course is simply one part of our planetary ecological crisis, which is marked by the crossing of numerous planetary boundaries beyond which the planet is no longer a safe home for humanity. That means that the Anthropocene crisis goes well beyond climate change itself.

In terms of the debate on strategy, a lot of it doesn’t get to the urgency of the issue or the scale of the change that is necessary. The notion of a Green New Deal actually

started within the mainstream liberal/neoliberal tradition and was heavily promoted by certain business interests. Barack Obama even included it in his program when he ran for president in 2008, but then dropped it after being elected president. Generally, it is seen as a form of green Keynesianism. It was given a more radical form, emphasizing a just transition and frontline communities by the U.S. Green Party and then in a watered-down form by left Democrats. A more revolutionary version is conceived in terms of a Peoples' Green New Deal as originally proposed by Science for the People, which I supported in an article entitled "On Fire This Time" in *Monthly Review* in November 2019. Max Ajl has done a service in promoting the notion of a global People's Green New Deal. Perhaps the deepest, most all-encompassing perspective along these lines is to be found in the *Red Deal* by the Red Nation, arising from Indigenous socialist activists in the United States.

The degrowth analysis has similarly varied between approaches that illogically perceive it as compatible with capitalism (such as Serge Latouche), all the way to ecosocialist approaches. We have just recently published "For an Ecosocialist Degrowth" by Michael Löwy, Bengi Akbulut, Sabrina Fernandes, and Giorgos Kallis in the April 2022 issue of *Monthly Review*.

Andreas Malm has been advocating a war communism and ecological Leninism strategy since 2015, as evident in an essay he wrote on the subject for a book entitled *The Politics of Ecosocialism*, edited by Kasja Bornäs – a book to which I also contributed. His approach is certainly provocative and is superior to other approaches in that it is premised on recognition of the full gravity, immense scale, and unprecedented urgency of the problem and the idea that the only way out is a vast revolutionary transformation.

My general approach of addressing the threat of the planetary rift, for example in my book *Capitalism in the Anthropocene*, to be published by Monthly Review Press in 2022, differs from, but is not in conflict with, the more radical strategies above. I have been less concerned with advocating a particular political-institutional mechanism than at looking at what has to be done if civilization and humanity is to survive and emphasizing the need for an ecological and social revolution, one which would necessarily extend beyond anything that humanity has ever seen before. Such a planetary ecological and social revolution would have to be based on what I have called an "environmental proletariat" reflecting a broader and deeper material struggle, embracing not only the working class in the broadest terms, and focused on environmental (urban and rural) as well as workplace struggles, but also including the Landless Workers Movement (MST) in Brazil and similar movements, the international peasantry, and the Indigenous. The environmental proletariat seen in these deep materialist terms is most likely to emerge first as a vital revolutionary movement within the Global South and not within the fortresses of capitalism in the Global North. Yet, the nature of the planetary environmental crisis is such that the terrain of struggle will not be limited to any particular part of the planet. Nor can workable solutions be found on a plane-

tary level unless humanity everywhere is mobilized to combat capitalism's tendency to produce an "irreversible rift in the interdependent process of social metabolism".

The scale of the struggle before us, which will eclipse all previous movements and revolutions, is so enormous, necessarily mobilizing hundreds of million and even billions of people, that there is no sense in going too far in mapping out particular state-oriented, institutional solutions, which will be a product of the struggle itself and will vary from place to place, representing many different revolutionary vernaculars. Nevertheless, it is likely that the struggle, at least in the capitalist core, will have two phases, the first of which will be ecodemocratic aimed at a kind of ecological popular front directed at the fossil fuel companies and financial capital, but pointing in an ecosocialist direction; the second of which will take a form in which ecosocialism is dominant – if there is to be any hope at all. What is certain is that we have to abandon capital accumulation as the driver of society and adopt, as the leaked 2022 IPCC climate mitigation report stated, low energy solutions, requiring vast changes in the structure of social relations.

The latest IPCC reports (the three partial reports making up the Sixth Assessment Report of 2021–2022) have indicated that even in the most optimistic scenario the next few decades will be catastrophic for much of humanity all over the earth. The force of climate change is now bearing down on the world population. It is still *possible*, given revolutionary-scale transformations in production, consumption, and energy use, to avoid irreversible climate catastrophe, which would require that carbon dioxide emissions peak this decade and that we reach zero net emissions by 2050. The object is to stay *well below* a 2°C increase in global average temperature and remain on the 1.5°C pathway (which means not overshooting it until 2040 and getting back down to a 1.4°C increase by the end of the century). Still, even then, the catastrophes threatening much of the world's population will be unprecedented compared to all previous human history. In these circumstances, we have shifted our emphasis in *Monthly Review*, as represented by our July–August 2022 issue, from simply emphasizing the mitigation of climate change to what communities and populations need to do to protect ourselves in the present and future, employing radical and revolutionary ecosocialist strategies. Our hope is that as people mobilize against the environmental conditions produced by the present social system that increasingly threatens their lives, they will also take the steps to protect the earth as a home for humanity, carrying out a world ecological and social revolution – the actual form of which is still to be determined. This is the great struggle of the twenty-first century: a struggle against ecological murder.