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After Neoliberalism: From Eco-Marxism to Ecological Civilisation, Part 2

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Abstract

This is Part 2 of an article aimed at defending Marx against orthodox Marxists to reveal the possibilities for overcoming capitalism. It is argued that Marx's general theory of history is inconsistent with his profound insights into alienation and commodity fetishism as the foundations of capitalism. Humanist Marxists focused on the latter in opposition to Orthodox Marxists, but without fully acknowledging this inconsistency and its implications, failed to realize the full potential of Marx's work. The outcome has been the triumph of "neoliberalism", effectively a synthesis of the worst aspects of capitalism with Soviet managerialism. In Part 1 of this article I critiqued orthodox Marxism and utilized recent scholarship examining the penultimate drafts of *Capital* to reinterpret his work. The legacy of orthodox Marxism is still standing in the way of efforts to replace capitalism, however. In Part 2 I argue that the call for an "ecological civilization" brings into focus what is required: a realistic vision of the future based on ecological concepts.

Keywords Eco-Marxism; Eco-socialism; Eco-civilisation; Ecology; Human ecology

Introduction: Eco-Marxism and Process Philosophy

In Part I of this paper I argued that to realize the full potential of Marx's work it is necessary to free it from the influence of orthodox Marxism. It is necessary to abandon the base/superstructure model of society and theory of history based upon it, and while it is necessary to recognize that humans are part of nature and must continually transform nature to live, the idea that the forces of production are the independent variable that drives history is fallacious. If anything, the development of the forces of production are driven by the quest by States for defence and military pre-eminence, and to this end, States also impose and maintain relations of production. However, with capitalism, something new has emerged, a socio-economic form that, like a cancerous tumour, has to expand at a faster and faster rate, both extensively and intensively, creating a highly complex global order characterized by intensified conflict over resources. This has resulted in major wars, including the First and Second World Wars and the Cold War, and more recently, the wars in the Middle East. These are not separate

from capitalism, but an aspect of its dynamics. The growth of capitalism has made it impossible to delink from the global order. Even a country as large and powerful as the Soviet Union was vulnerable to attack, and after having survived the German invasion was forced into a crippling arms race, forcing the Russians themselves to embrace capitalism and to integrate their economy with and contribute to the dynamics of global capitalism. Within this global order, power, and along with it, social stability, is largely determined by GDP, so growth of GDP, requiring more and more resources along with greater ecological impacts, becomes the goal of all governments. It is the basis of their legitimacy as their own populations are now dependent on such growth to maintain their gainful employment. Those countries which dominate can preserve their environments and provide such employment for their populations by making other regions and countries endure economic turmoil, host polluting industries, export their natural resources and wreck their ecosystems, at the cost of damaging the global ecosystem. When this is taken into account, the problem of finding a viable alternative direction for civilisation is immense. Samuel Day Fassbinder (2020, 124) while reviewing four works defending eco-socialism observed:

Climate change mitigation remains problematic because the political class, democratically elected or otherwise, has merely asked how climate change mitigation could be achieved while leaving human civilisation as it currently is. Instead, we should ask: what society would be capable of climate change mitigation, and how could we get that society? One important point of critique is whether or not any particular ecosocialism being proposed can mitigate climate change.

An even greater problem is working out what form of eco-socialism able to mitigate climate change and other forms of ecological destruction could survive in this environment.

The real importance of Marx's work was to reveal the illusions and the dynamics generated by commodity fetishism and the drive for surplus value at the core of this socio-economic formation. This has engendered a dynamic that appears uncontrollable and increasingly destructive, while making it extremely difficult for participants in this formation to understand the juggernaut they are part of. Supposedly left-wing political parties and the general population almost take for granted Margaret Thatcher's claim that "there is no alternative." The importance of commodity fetishism to Marx's theory of capitalism was revealed by neo-Marxists who had read Hegel. However, Hegel's Absolute Idealism was associated with a defective understanding of the creativity of people and the autonomy of nature, which Hegel claimed, was posited by Spirit as its Other (Hegel 1971, 14), and this defect afflicted many neo-Marxists inspired by his work. Eco-Marxists are those neo-Marxists who have overcome this limitation, either by taking seriously advances in science influenced by a tradition of radical scientific thought that had its roots in the work of Friedrich Schelling's *Naturphilosophie*, or who had come to appreciate the influence of Schelling on Marx's work. The reinterpretations of Marx have highlighted the importance of politics and political structures in creating a new form of society. More fundamentally, they have highlighted the importance of understanding the culture of capitalism, including its economic categories. These are the categories Marx referred to as "forms of being," and they will have to be replaced by categories that fully acknowledge that we are participants in a dynamic, creative nature. In this second part of this paper, what this involves will be spelt out.

To appreciate the full potential of such eco-Marxism to meet this challenge it is necessary to further clarify what divides it from orthodox Marxism. As noted, the core of orthodox Marxism is the belief that the driving force of humanity through history has been the development of the forces of production, that is, technological control over nature and people, with such technological control determining the relations of production and the superstructure. Strongly influenced by Saint-Simon, the end of history for these orthodox Marxists is taken to be a social

order in which humanity's productive powers have so advanced that there will be no conflict between people, and under the control of a benign administration of industry by an industrial class representing the interests of the proletariat (who by this stage will have been replaced by robots), everyone will live in harmony in a world characterized by superabundance. Since it has been shown by the failure of the Soviet Union that markets develop the forces of production more rapidly than command economies, many orthodox Marxists drew the logical conclusion based on their assumptions and have thrown their weight behind the corporatocracy based in transnational corporations and their efforts to further subordinate societies and communities to the logic of the globalized deregulated market (Supiot 2012). For such Marxists, the corporatocracy has taken the place of Soviet style bureaucracy, creating a Stalinist capitalism.

What is wrong with this, and how it blocks efforts to face up to and overcome the destructive force of this new reinvigorated form of capitalism, becomes evident when examining Marx's conception of human existence. For Marx, humans create themselves and their world through their productive activity as participants in nature, activity which is essentially socio-cultural. This productive activity involves all dimensions of society, including those designated the superstructure, so that what had been conceived as independent of such productive activity was shown by Marx to be only an aspect of it, including not only economic, legal and political institutions but the production and exchange of scientific knowledge and works of art and literature. This is so whether this practically based sociality is appreciated as such or not, and Marx's primary concern was to critique the fragmentation and alienation wrought by the capitalist socio-economic formation that had created the illusion that individuals and their products, and people themselves, could be understood and could understand themselves in abstraction from this nexus of such social productive activity. As Louis Dupré (1983, 3,4 & 5) wrote in *Marx's Social Critique of Culture*, his penetrating analysis of Marx's assumptions and of the misunderstandings of orthodox Marxists:

Marx challenged the pretensions of the modern age, criticizing any view that would detach socialization from its natural basis. ... From the beginning to the end of his career, explicitly and implicitly, the great critic exposed the spurious claims of a culture which had erected itself into an independent, quasi-religious reality, a dehumanized, denaturalized fetish. ... If Marx's critics have failed to appreciate the holistic quality of his approach, so, unfortunately, have many of his followers. Where he stressed social coherence, they defended causal determinism ... Indeed, the very equation of culture with the intellectual and imaginative products of society current among Marxists conflicts with Marx's views. ... Ideas and works of art exercise as direct influence upon production and consumption as changes in the production affect all other facets of culture. Marx's critique focuses primarily on the negative character of the existing relation, the basic alienation that separates consciousness from life, theory from practice, productive activity from produced objects. Though the term alienation virtually disappears from the later writings, the idea of an objective separation between man and his self-realizing activity inspires his critique to the end. The fundamental estrangement occurs, not in subjective states of awareness, but in the basic productive attitudes of society.

It is the perspective that this provides on the dynamics of the capitalist socio-economic formation and what is wrong with it that facilitates a grasp of what is driving humanity to destruction. It also provides a starting point for working out the possibilities of overcoming these destructive forces.

Recognizing the full implications of this conception of humanity it is clear that it will be necessary to reconceive not only the nature of humanity but of nature as such, and then the relationship between humans and the rest of nature, not only theoretically but in the dominant

practices of economic and social life. It will be necessary to articulate social relations and relations between humans and the rest of nature through different categories, categories that acknowledge both the essential socio-cultural nature of humanity while at the same time recognizing that humans are part of and participants within nature. That is, new categories will be required to articulate relationships between people and between humans and the rest of nature, categories that can constitute new forms of being and modes of existence. It is these that will provide the foundations for an ecological civilisation.

A start had been made in this project by Engels with his dialectics of nature. This was an anti-reductionist conception of nature, and should have supported Marx's analysis of society. However, what Engels was offering with this work, most of which was not published in his lifetime, was only a confused version of the new conception of nature argued for by Friedrich Schelling in his effort to reconceive nature to accord with the creativity of humanity argued for by Fichte. As George Lichtheim and James White have shown, Engels' dialectics of nature was a confused mixture of Schelling's ideas, Hegelian dialectics and positivism. As White (1996, 268) wrote: "[Engels' dialectical laws of motion, in fact, consisted of the principles of the Speculative method, common to Schelling and Hegel, presented as a series of individual maxims." And as Lichtheim (1951, 252f.) complained:

Of this complex dialectic Engels retained only the outer shell. Not that he formally abandoned a single element of the Marxian canon. He merely upset its equilibrium by making it appear that the purpose of the whole operation was to bring the old materialism up to date. The heart of the doctrine – the constitutive role of conscious activity – was replaced by a faith in *science* as the correct description of the determinate processes; matter was invested with a capacity for giving birth to mankind; and Kant was rebuked for having dared to suggest that the world is partly our creation.

Engels was far more wedded to the base/superstructure model of society than Marx, and although his work did illuminate the destructive effects of society on nature and inspire some brilliant developments within science, including ecology, Engels' work alone was not sufficient for envisaging how humanity could radically transform its current institutions and modes of being.

What is really required is a re-examination of the original challenge to the Cartesian/Newtonian tradition of science that found its most rigorous and forceful expression in Kant's *Critique of Judgement* and in Schelling's philosophy of nature. Influenced by Giordano Bruno, Spinoza, Herder, Goethe and Schiller along with Kant's dynamic conception of matter and his work on biology, Schelling defended a conception of nature as self-organizing, and developed Fichte's dialectics of cognitive development to show how nature itself could be understood as evolving to have created humanity with all humanity's creative potential and capacity to comprehend nature and its evolution, including itself as a development within nature. In this way he was able to defend on naturalistic foundations the struggle for justice as appropriate recognition, liberty as self-determination by people, and wisdom as comprehensive understanding of themselves and the world. While Hegel took up and advanced social philosophy far beyond anything offered by Schelling, as Robert Williams (1997) showed, for Schelling the inter-related historical development of these struggles could be seen as developments of and within nature. In opposition to both scientific materialism and to Fichte he recognized nature as having intrinsic significance, not merely of value as an instrument for humans. It is this view that above all that distinguishes Marx from orthodox Marxists. As Andrew Bowie noted in *Schelling and Modern European Philosophy* (1993, 58):

One of the disasters in the history of orthodox Marxism, the evidence of which can be found all over Eastern Europe, is its failure to sustain the younger Marx's Schelling-derived concern for non-human nature, in favour of precisely the sort of vision of the domination that Fichte at his worst ... was capable of, and which is reproduced in other ways in the ravages of modern capitalism.

Furthermore, in opposition to Kant and Hegel, Schelling granted a place to subconscious drives and individuality and allowed for freedom to choose evil, obstructing progress in these struggles, a theme that later inspired the existentialists. As opposed to the form of dialectics developed by Hegel in which the development of humanity through history was an inevitable logical development, the rationality of which philosophers could only contemplate after major developments had taken place, Schelling's notion of dialectics, radicalizing Fichte's dialectics, involved volition and real creativity in developing ideas and in the struggle for truth, both in philosophy and science, and in acting and developing new practices and institutions (Gare 2017, 60ff.). And Schelling was more far seeing than Hegel. At the time he was writing in the first half of the nineteenth century, Schelling (1978) argued that humanity was moving towards the creation of a global civilisation that would require the development of a new global consciousness and new institutions transcending all particular civilisations. Anticipating the United Nations, he argued for "a federation of all states, who mutually agree to guarantee their respective regimes" (198).

The Schellingian tradition of natural philosophy and the advances in science inspired by it had and still has far more to offer. Virtually every development of science moving beyond the assumptions of the reductionist scientific materialism of Descartes and Newton was influenced in some way by Schelling's philosophy, including efforts to develop new forms of mathematics adequate to comprehending a fluid, creative world (Gare 2013). Field theory and the first law of thermodynamics in physics, the notion that chemicals exist as a balance of opposing forces and biological forms are maintained in organisms through an active engagement with their environments to achieve homeostasis, constituting their environments as their worlds, are developments within science that had their roots in Schelling's philosophy of nature. Schelling's work also presaged the development of systems theory and complexity theory. That is, Schelling had accepted the reality of life and human consciousness and demanded that the physical sciences be developed in a way that could make life in all its complexity intelligible, in the process, making intelligible the conception of humans as conscious, self-reflexive, socio-cultural beings participating in a creative nature required to explain the possibility of science. In doing so he helped free the natural sciences from defective assumptions that had been crippling it, leading to major advances in mathematics and the physical sciences as well as biology. The outcome has been the revolutions in science that are beginning to make intelligible the conception of humanity and the approach to understanding its history and its current pathologies that Marx developed under the influence of Ludwig Feuerbach and Moses Hess, who also had been influenced by Schelling, and of Schelling himself (White 1996; Dussell 2006; Gare 2011). At the same time, Schelling envisioned a new world order underpinned by this new conception of nature, uniting humanity through a new "religion" of nature in a global community. Schelling's idea was taken up and further developed by the Marxist, Ernst Bloch (2000), as the spirit of utopia.

Schelling's work inspired a whole tradition of natural philosophy and metaphysics that is central to this revolution, the tradition of process philosophy or process metaphysics that includes not only those influenced by Engels, but Charles Sanders Peirce, Henri Bergson, Aleksandr Bogdanov, Alfred North Whitehead, John Dewey and Ludwig von Bertalanffy, and

the philosophers and scientists influenced by them, including C.H. Waddington, David Bohm, Ilya Prigogine, Robert Rosen, Brian Goodwin, Stuart Kauffman and Kalevi Kull. This revolution is still under way as philosophers and scientists struggle against the recalcitrant heritage of Newtonian assumptions in order to reconcile relativity theory, quantum theory and thermodynamics and understand complexity, semiosis, complex adaptive systems and complex anticipatory systems, including living organisms, ecosystems and civilisations (Kauffman and Gare, 2015). This will be central to creating and transforming a new global culture, and to institutionalizing this in a radically different form of economic life.

Eco-Marxism, Ecology and Human Ecology

The most radical development within this philosophical and scientific revolution, a development incorporating all the other revolutionary advances in science, has come from ecology. Ecology, the study of “households” in biotic communities, where emergence, hierarchical order, semiosis, symbiosis, and anticipatory systems are central, is prototypically an anti-reductionist science exemplifying, and further developing process-relational thinking. The revolutionary nature of these developments has led to a challenge to the status of physics as the pre-eminent science by a leading theoretical ecologist, Robert Ulanowicz, as the pre-eminent science on which all other sciences, including economics, have attempted to model themselves. He argues that ecology should now occupy this position since it brings into focus all of what are now coming to be seen as the core problems that have to be addressed to advance science in every discipline. All the sciences are having to acknowledge the reality of organized complexity and its emergence, and ecology is the field in which these can most easily be studied. As he put it in his book *Ecology, The Ascendent Perspective* (1997, 6):

Ecology occupies the propitious middle ground. ... Indeed ecology may well provide a *preferred* theatre in which to search for principles that might offer very broad implications for science in general. If we loosen the grip of our prejudice in favour of mechanism as the general principle, we see in this thought the first inkling that ecology, the sick discipline, could in fact become the key to a radical leap in scientific thought. A new perspective on how things happen in the ecological world might conceivably break the conceptual logjams that currently hinder progress in understanding evolutionary phenomena, development biology, the rest of the life sciences, and, conceivably, even physics.

Ulanowicz (2009, ch.6) argues for a “process ecology,” which he argued, should serve as the foundation for “an ecological metaphysic.” In accordance with the tradition of process metaphysics, the ultimate existents of the universe would have to be seen as creative relational processes, or durational self-constraining patterns of activity, and configurations of such processes in dynamic interaction, rather than objects or things. As I have argued elsewhere (Gare, 2019), living processes are characterized by hierarchical and heterarchical order and semiosis (the production and interpretation of signs), facilitating anticipatory behaviour and complex forms of symbiosis.

Taking ecology as the pre-eminent science involves taking human ecology as the pre-eminent human science, situating humanity non-reductionistically in the context of nature. Human culture consists of more complex forms of semiosis, built on and assuming more primitive forms, but allowing for dialogue, stories, technology, institutions, reflexivity, critical self-consciousness and organized enquiry. It is the view of humanity presaged by Marx, but which as human ecology, can be further developed. To privilege ecology over the physical sciences and then to define humans through human ecology is to redefine our place in the world, practically as well as

theoretically. It is to embrace a life affirming metaphor explicitly affirming our own potential for creativity, replacing life denying mechanistic metaphors, replacing the dominant models of nature and our place and goals within it by virtue of which we are currently destroying the global ecosystem.

Developing the science of ecology, along with human ecology, is also creative, participating in the creation of nature and humanity. As Roy Rappaport (1990, 68f.) observed, developing an ecosystem approach to anthropology is to maintain and even construct ecosystems:

In a world in which the lawful and the meaningful, the discovered and the constructed, are inseparable the concept of ecosystem *is not simply a theoretical framework* within which the world can be analyzed. It is itself an element of the world, one that is crucial in maintaining that world's integrity in the face of mounting insults to it. To put this a little differently, the concept of the ecosystem is not simply descriptive ... It is also "performative"; the ecosystem concept and actions informed by it are *part of the world's means for maintaining, if not indeed constructing, ecosystems*.

As performative, human ecology transcends the opposition between science and the humanities and between the human sciences and ethics. As Roy Allen pointed out in *Human Ecology Economics* (2008, 4):

The human ecology approach to economics ... is similar to the relatively recent field of "ecological economics" The emphasis on *human* ecology combined with economics brings the "*humanities*" as well as the physical science-based field of ecology to the study of economics, and the framework is thus broader than ecological economics. For example ... ideologies and "ways of being" (as defined through fields such as philosophy, psychology, sociology, religious studies, literature etc.) are important structural components of the economic system, and they are not given sufficient attention within the fields of ecology, economics, or ecological economics.

That is, "ways of being" are explicitly focused upon, and evaluated.

This provides a broader framework than orthodox Marxism for understanding human history and for appreciating Marx's analysis of the categories of economics in a capitalist society as defective forms of being. To begin with, it is necessary not only to see, as Marx (1974, 179) put it, the labour process as "the necessary condition for effecting exchange of matter between man and Nature; it is the everlasting Nature-imposed condition of human existence, and therefore is independent of every social phase of that existence, or rather, is common to every such phase." It is necessary to see humans as components of ecosystems and entirely dependent upon their functioning. These ecosystems are dissipative structures, transforming low entropy energy into high entropy energy and ridding themselves of this high entropy energy. This is true of each ecosystem and the global ecosystem which must expel heat from Earth to avoid it becoming a lifeless planet like Venus. As with every other organism, human communities can only survive if they do not foul their own nests, and are most likely to survive if they augment the health of the ecosystems of which they are part by contributing to these functions.

It is also not only necessary to see that, as Marx (1973, 489) put it:

It is not the unity of living and active humanity with the natural, inorganic conditions of their metabolic exchange with nature, and hence their appropriation of nature, which requires explanation or is the result of historic process, but rather the separation between these inorganic conditions of human existence and this active existence, a separation which is completely posited only in the relation of wage labour and capital.

This separation should be explained in terms of thermodynamics as an emergent set of constraints, generally associated with semiosis, regulating the transformations of energy, forming and maintaining power relations in this process. While Aleksander Bogdanov began this reconceptualization of Marx's work, this was considerably advanced by Richard Newbold Adams, who was influenced by the Marxist anthropologist, Leslie White. White in turn appears to have been influenced by Bogdanov's ideas after having visited the Soviet Union in 1929. In *Energy & Structure: A Theory of Social Power* (1974) Adams developed a thermodynamic theory of social power, which he defined as “*the control that one actor, or party, or operating unit exercises over some set of energy forms or flows and, most specifically, over some set of energy forms or flows that constitute part of the meaningful environment of another actor*” (12). “Control” here “refers to *making and carrying out decisions about the exercise of a technology*” (13).

Interpreting Marx through thermodynamics in this way brings into focus the relation between power and technology, and how human active existence comes to be separated from its inorganic conditions of existence. In Part I of this essay I pointed out that the orthodox Marxist theory of history according to which it is the development of technology that drives the evolution of humanity is empirically wrong. It is the struggle between States that explains most of the developments in technology, and also, developments of socio-economic formations. This is true of the past as well as the present. Work by Adams and others on the thermodynamics of societies facilitates a better analysis of this process, highlighting the impact of power struggles on non-human ecosystems. While power struggles were initially over territory that provided useable energy sources (food), these territorial struggles became more complex with the structuring of power associated with class divisions. The development and maintenance of these more differentiated societies involved intensification of energy transformations, which in turn involved greater and greater demands on the rest of nature to find and utilize the triggers to transform energy. In *The Eighth Day: Social Evolution as the Self-Organization of Energy*, Adams (1988) showed how throughout history, social forms have become larger and larger, involving more and more energy transformations. The greater complexity of civilisations involved an increasing proportion of the population being engaged in activities required to uphold and maintain this complexity, including both complex cultures whereby people achieve common understanding and definitions of reality and the means to advance comprehension, and power relations between different social classes, rather than action on nature as such. In this way humans have placed greater and greater demands on nature to supply usable energy forms.

The consequence of the creation of these complex societies or civilisations has been increasing damage to ecosystems, and this largely accounts for why civilisations in the past were prone to collapse. These collapses have been described by Joseph Tainter in *The Collapse of Complex Societies* (1988) and Sing Chew in *World Ecological Degradation: Accumulation, Urbanization, and Deforestation 3000 B.C. – A.D. 2000* (2001) and *The Recurring Dark Ages: Ecological Stress, Climate Changes, and System Transformations* (2007). As Timothy Allen et.al. (2002) showed, as they approached collapse, unless they found some way to simplify their systems as occurred in Byzantium at one stage (132ff.), conflicts increased, further intensifying pressure on lower classes and ecosystems. Such conflicts in early modern Europe appeared to presage collapse, which was avoided through European imperialism enabling Europeans to exploit the resources of other continents (390f.).

It was in this context that European ruling classes imposed market relations and, beginning with Britain, established capitalism as a self-reproducing and self-expanding system

characterized by a peculiar mystification of its own nature that Marx sought to explain. What Marx showed was that the self-understanding of people in capitalist societies is based on concepts that are fundamentally defective. They dissolve community bonds and alienate people from their own creative powers, from each other and their communities, and from nature while enslaving them to forces generated by these categories that they cannot properly understand or control because through these categories because they are fundamentally defective. Human ecologists such as Stephen Bunker (strongly influenced by Adams), and Alf Hornborg, have advanced Marxist theories of imperialism to gain deeper insights into how this works on a global scale, and is responsible for global ecological destruction. Drawing on advances in bio- and eco-semiotics revealing the role of semiosis (the production and interpretation of signs) in organisms and ecosystems, Hornborg (1999, 51) pointed out in a brilliant essay: “Money and the Semiotics of Ecosystem Dissolution,” that money is a language with only one phoneme. It is incredibly crude and cannot possibly provide the feedback required to deal properly with complex situations, and in fact is guiding humanity to ecological destruction. Hornborg also argued convincingly that along with the fetishism of commodities, capitalism is associated with fetishism of technology or machines. Consistent with Adams’ argument that technologies are developed in the quest for social power, in *The Power of the Machine: Global Inequalities of Economy, Technology and Environment* (2001) Hornborg showed that technological advances are driven and utilized as a means to impose power relations between people, particularly people in peripheral and semi-peripheral regions of the world economy, although not only there. This imposition and the resulting exploitation and ecological destruction is disguised by treating new technologies as an inevitable part of progress.

Bunker’s (1986) study of the exploitation of Amazonia illustrated the effect of supposedly free markets. They have transferred most of the usable energy in living and fossilized plants to a small part of the world, generating ecologically costly over-exploitation of natural resources in the periphery of the world economy and socially costly hypercoherence in the global system. And as he pointed out,

Hypercoherence ultimately leads to ecological and social collapse as increasingly stratified systems undermine their own resource base. ... The exchange relations which bind this system together depend on locally dominant groups to reorganize local modes of production and extraction in response to world demand, but the ultimate collapse will be global, not local. The continued impoverishment of peripheral regions finally damages the entire system. (253)

Instead of being addressed, this tendency has been exacerbated under the global neoliberal regime. As the theoretical biologist Mae-Wan Ho and the theoretical ecologist Robert Ulanowicz (2005, 47) pointed out:

The economic globalization promoted by the rich countries in the World Trade Organization is aimed at removing all barriers to trade, finance and procurement, which is tantamount to destroying the system’s intricate space-time structure. This inevitably results in the over-exploitation of the poor, especially in third world countries, that will impoverish the whole economic system. But that is not all. As the global economic system is embedded in the global ecosystem, over-exploitation in the global economy will drive people to use natural resources at unsustainable rates, so that the global ecosystem increasingly fails to renew itself. This leads to diminished input into the economic system so that even more natural resources will have to be harvested, resulting in a vicious cycle that will ultimately destroy both the global economy and the earth’s ecosystem.

From the perspective of human ecology, the current power elites, the global corporatocracy and those who serve them, are effectively a cancerous tumour in the global ecosystem. As David Korten wrote in *The Post-Corporate World* (2000, 15):

Cancer occurs when genetic damage causes a cell to forget that it is part of a large body, the healthy function of which is essential to its own survival. The cell begins to seek its own growth without regard to the consequences for the whole, and ultimately destroys the body that feeds it. As I learned more about the course of cancer's development within the body, I came to realize that the reference to capitalism as a cancer is less a metaphor than a clinical diagnosis of a pathology to which market economies are prone in the absence of adequate citizen and government oversight.

This is what John McMurty (1999) called *The Cancer Stage of Capitalism*.

Creating the Future as an Ecological Civilisation

The challenge for humans is to create socio-economic formations that constrain human activities so they augment rather than undermine the life of these ecosystems, including the conditions for the life of the current regime of the global ecosystem. It is to achieve a remission from this cancer which is now being recognized, even by ruling elites, as unsustainable. What these ruling elites have not faced up to is that capitalism with powerful States dominating the semi-peripheries and peripheries of the world economy and competing with each other for domination, is the root cause of the problem. It is a world order which will have to be overcome. It is necessary for eco-socialism to replace capitalism. However, as the Indian eco-Marxist eco-socialist Saral Sarkar (1999, 222ff.) has argued, the solution is not the creation of a command economy that can outcompete capitalism in developing technology. What is required, as theorists of social collapse such as Allen et.al (2002) and David Korowicz (2011) have argued, is a radical simplification of the current world order, reducing interdependency. And as Bunker and Hornborg have argued, what is most important is putting an end to the exploitation by the core zones of the world economy of the peripheries.

This would appear to support the argument of the anarchists; however, what the anarchists have not understood is that the history of civilisation has been largely a history of imperialism, subjugation and exploitation that has reached its most subtle and complete form with global capitalism. The dominant powers do not tolerate any significant delinking from this system that would threaten their power. The whole global system has to be transformed, including its institutional structures. State institutions are essential to this, as are the technologies developed within capitalism. To achieve this transformation, the advance of the radically new thinking being developed within the sciences is required, most importantly, ecology to clarify what ends we should be aiming, what kind of future could be created that would enable us to successfully pursue these ends, and how could such a future be created. This will involve creating a new civilisation based on organized decentralization, associated with multi-levels of federation to enable communities, through decentralizing institutions, to regain control of their own destinies and develop their full potential to augment the conditions for life. That is, it will be an ecological civilisation.

This accords with the proposed principles for governance suggested by the ecologist Simon Levin (1999): maintain heterogeneity, sustain modularity, preserve redundancy, tighten feedback loops, minimize entropy production, produce nothing that cannot be recycled and recycle everything, build trust, and do unto others as you would have them do unto you. Such principles, requiring multi-level governance, are being developed in efforts to manage ecosystems at local

levels through the transition towns movement (Hopkins 2014), but this is only a beginning. Government should take the form of democratic federalism, ranging from local governments to the United Nations. While power should be decentralized as much as possible, local governments should be required to develop their communities so as to augment the life and health of the broader communities of which they are part, up to the global ecosystem. The free development of each should be the condition for the free development of all.

The quest for total technological domination of the world, making everything, including people, into instruments for extrinsically defined ends should then be recognized as pathological based on a defective understanding of people and nature engendered and sustained by a defective socio-economic formation, reducing everything to means for the accumulation of capital. Categories are required to judge progress, including technological progress, based on a different understanding of nature and people. It is the concepts of ecology that should replace the categories through which people currently define themselves and their relationships to each other and the world, reforming societies on this basis (Gare 2002; Gare 2010; Gare 2017). From the perspective of ecology, human communities and organizations are themselves complex ecosystems. Participants in ecosystems can be augmenting or undermining the health, vitality and resilience of each of the ecosystems of which they are participants, both human and broader biotic communities. Not only humanity, but all ecosystems, including the global ecosystem, consists of communities of communities held together by semiotic bonds that are healthy when they augment the conditions for each other. So, as William McDonough and Michael Braungart in *Cradle to Cradle: Remaking the Way We Make Things* (2002) argued, what is produced should serve to enrich ecosystems, being the cradle for new growth. With humans extra dimensions are added to this with the development of culture through which people can advance the quest for liberty, justice and wisdom. Based in human ecology, a politics and economics of “eco-poiesis” is required; that is, of “home-making” or “household-making,” focusing on the conditions for healthy living, that is, for living in a way that liberates people to augment the resilience of both human communities and broader biotic communities.

These ecological concepts need to be institutionalized, thereby institutionalizing recognition of the value of life, including non-human life forms. Using the language of ecology, human ecosystems should provide the niches or homes where people can develop their full potential to contribute to the life and health of their communities, understood as ecosystems. Human niches consist of both natural and built-up environments, including forms of technology, institutions, organizations, educational and cultural facilities, and other people and their practices and character, and these should allow this potential to be realized. Rather than measuring economic performance in terms of the production of commodities, economic performance should be judged on the basis of whether it contributes to and augments the health and vitality of ecosystems, non-human and human. GDP as a measure of progress should be replaced accordingly. New criteria of performance will involve re-embedding and subordinating markets to communities committed to liberty (the condition for self-determination, with economic security and freedom to assert oneself without fear of retribution), justice (proper recognition) and wisdom, communities which do not define themselves, their relations and their goals through the categories of the market, but through these concepts.

As Alec Nove (1983) and David Miller (1990) have argued, this does not mean eliminating markets entirely, but severely delimiting their functioning and severely delimiting the application of such concepts as “commodities,” “capital,” “land,” “price” etc., subordinating markets to instruments of these ecological communities. In general, the factors of production should not be

treated as commodities, and returns to them should be based on principles of social justice as defined through ecology and human ecology rather than market forces. And societies should be careful about treating health, education and other services as commodities. This, essentially, is the project of eco-socialism, as characterized from Sarkar (1999) to Baer (2018). Eco-socialism involves maintaining egalitarian societies in which people's productive work is recognized and respected as contributions to their communities, and occupations which are parasitic, profiting without producing by transferring wealth from the poor to the wealthy, for instance, or malignant, such as promoting wasteful consumption, promoting false conceptions of reality to benefit wealthy elites, or undermining job security, are eliminated. It is necessary to ensure that agricultural practices which augment ecosystems rather than weaken them can and are being practiced, preventing the forms of competition that make this impossible. Employment needs to be guaranteed so that people are not reduced to wage slaves, but have the economic security required to function as citizens and are able to develop their full potential to augment the life of their communities. Governments need to be prepared to be employers of the last resort, requiring of them ownership of major sectors of the economy, most importantly, natural monopolies such as transport, communication and education systems, along with natural resources, and to facilitate the development of workers' cooperatives. As far as the organization of economic enterprises is concerned, it is necessary to develop organizations in which the differentiations between organizers (managers) and the organized (workers) are minimized, or where possible, eliminated entirely as workers learn to manage themselves. To achieve these ends, a new class war is required. As Aleksander Bogdanov argued, this will be between workers and managers, requiring a war against managers, most importantly, managers of global corporations, the corporatocracy, by workers, including scientists, academics and artists.

Such policies of decentralization need to be adopted world-wide, which means eliminating neo-colonialism whereby the peripheries and semi-peripheries of the world economy are exploited destructively by the core zones. A remission from the cancer stage of capitalism will require slowing the flows of energy and nutrients to the centres of power in the current world order, as Bunker (1986) argued. Economic interactions between different regions of the world should be reduced to undermine regional exploitation, combined with a revaluation of labour and nature and overcoming class divisions, particularly in the peripheral and semi-peripheral regions of the world economy. If humanity suffers from the feedback loops generated by the interaction between the regulative and productive sectors of society, then it is also necessary to constrain these interactions to eliminate such feedback loops. As the theoretical biologists Mae-Wan Ho and Robert Ulanowicz (2005, 43) argued:

We can deal with sustainable economic systems by embedding the global economic system in the global ecosystem. ... The global economic system will have an intricate structure encompassing many national economies. Ideally, the intricate structure of the global economy should look like the many nested subcycles that make up the organisms' life cycle. ... And each national economy, in turn, would have its own intricate structure that is self-similar to the global. If the entire global system is to be sustainable, there has to be a proper balance between the local and the global, the same kind of reciprocal, symmetrical coupled relationship that one finds in organisms ... Furthermore, the global economy is coupled to the global ecosystem, which too, has to have its own balance ... so that both can survive.

To achieve this, as Hornborg (2019b) argued, it will be necessary to abandon "general-purpose" money exchangeable anywhere in the world for anything on the assumption that all values are commensurable, and replace it with local currencies (as well as national currencies) with strict

controls of exchanges between currencies. This is both the condition for and requires the development of political institutions through which people are able to govern themselves.

The world order to be created in this way will be not only an eco-socialist world order but a global ecological civilisation. Eco-civilisation is a practical utopian vision calling for action. As Ernst Bloch proclaimed in his book *The Spirit of Utopia* (2000, 1):

I am. We are.

That is enough. Now we have to begin. Life has been put in our hands.

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References

- Adams, Richard Newbold. 1975. *Energy & Structure: A Theory of Social Power*. Austin: University of Texas Press.
- Adams, Richard Newbold. 1988. *Social Evolution as the Self-Organization of Energy*. Austin: University of Texas Press.
- Allen, Roy E. 2008. *Human Ecology Economics: A New Framework for Global Sustainability*. Milton Park: Routledge.
- Allen, T.F.H., Tainter, A. Joseph A. and Thomas W. Hoekstra. 2002. *Supply-Side Sustainability*. New York: Columbia University Press.
- Baer, Hans A. 2018. *Democratic Eco-socialism as a Real Utopia: Transitioning to an Alternative World System*. New York: Berghahn.
- Bloch, Ernst. 2000 [1964]. *The Spirit of Utopia*. Translated by Anthony A. Nassar. Stanford: Stanford University Press.
- Bowie, Andrew. 1993. *Schelling and Modern Philosophy: An Introduction*. London: Routledge.
- Bunker, Stephen. 1986. *Underdeveloping the Amazon*. Chicago: University of Chicago Press.
- Chew, Sing C. 2001. *World Ecological Degradation: Accumulation, Urbanization, and Deforestation 3000 B.C. – A.D. 2000*. Walnut Creek, CA.: AltaMira Press.
- Chew, Sing C. 2007. *The Recurring Dark Ages: Ecological Stress, Climate Changes, and System Transformations*. Walnut Creek, CA.: AltaMira Press.
- Dussel, Enrique. 2006. "Marx, Schelling, and Surplus Value." *International Studies in Philosophy*, 38(4): 59-67.
- Dupré, Louis. 1983. *Marx's Social Critique of Culture*. New Haven: Yale University Press.

- Gare, Arran. 2002. "Human Ecology and Public Policy: Overcoming the Hegemony of Economics." *Democracy and Nature*, 8(1): 131-141.
- Gare, Arran. 2010. "Toward an Ecological Civilisation: The Science, Ethics, and Politics of Eco-Poiesis." *Process Studies* 39(1): 5-38.
- Gare, Arran. 2011. "From Kant to Schelling to Process Metaphysics: On the Way to Ecological Civilisation." *Cosmos & History* 7(2): 26-69
- Gare, Arran. 2013. "Overcoming the Newtonian paradigm: The unfinished project of theoretical biology from a Schellingian Perspective." *Progress in Biophysics and Molecular Biology*, 113: 5-24.
- Gare, Arran. 2017. *Philosophical Foundations of Ecological Civilisation: A Manifesto for the Future*. London: Routledge.
- Gare, Arran. 2019. "Biosemiotics and Causation." *Cosmos and History* 15(1): 31-90.
- Ho, Mae-Wan and Robert Ulanowicz. 2005. "Sustainable systems as organisms?" *Biosystems* 82: 39-51
- Hegel, G.W.F. 1971. *Hegel's Philosophy of Mind*. Translated by A.V. Miller. Clarendon Press: Oxford University Press.
- Hornborg, Alf. 1999. "Money and the Semiotics of Ecosystem Dissolution." *Journal of Material Culture*, 4(2): 143-162.
- Hornborg, Alf. 2001. *The Power of the Machine: Global Inequalities of Economy, Technology and Environment*. Walnut Creek: AltMira Press.
- Hornborg, Alf. 2019a. "The Money-Energy-Technology Complex and Ecological Marxism: Rethinking the Concept of 'Use-value' to Extend Our Understanding of Unequal Exchange, Part 2." *Capitalism, Nature, Socialism*, 30(4): 71-86.
- Hornborg, Alf. 2019b. *Nature, Society and Justice in the Anthropocene: Unraveling the Money-Energy-Technology Complex*. Cambridge: Cambridge University Press.
- Huesemann, Michael and Joyce Huesemann. 2011. *Technofix: Why Technology Won't Save Us of the Environment*. Gabriola Island, Canada: New Society Publishers.
- Kauffman, Stuart and Arran Gare. 2015. "Beyond Descartes and Newton: Recovering life and humanity." *Progress in Biophysics and Molecular Biology* 119: 219-244.
- Korowicz, David. 2011. "On the Cusp of Collapse: Complexity, Energy and the Globalized Economy." In *Fleeing Vesuvius: Overcoming the Risks of Economic and Environmental Collapse*, edited by Richard Douthwaite and Gillian Fallon, 2-23. Gabriola Island, Canada: New Society Publishers.
- Korten, David C. 2000. *The Post-Corporate World*, West Hartford: Kumarian Press.

- Lichtheim, George. 1964. *Marxism*. 2nd ed. London: Routledge.
- Marx, Karl. 1973. *Grundrisse: Introduction to the Critique of Political Economy*. Translated by Martin Nicolaus, Harmondsworth: Penguin. p.106.
- Marx, Karl. 1974 [1887]. *Capital, Volume I*. Translated Samuel Moore and Edward Aveling. Moscow: Progress Publishers.
- Mayumi, Kozo. 2001. *The Origins of Ecological Economics*. London: Routledge.
- McMurty, John. 1999. *The Cancer Stage of Capitalism*. London: Pluto Press.
- Miller, David. 1990. *Market, State and Community: Theoretical Foundations of Market Socialism*. Oxford: OUP.
- Nove, Alec. 1983. *The Economics of Feasible Socialism*. London. George Allen and Unwin.
- Rappaport, R.A. 1990. "Ecosystems, Populations and People." In E.F. Moran, ed., *The Ecosystem Approach in Anthropology: From Concept to Practice*. Ann Arbor: University of Michigan Press, 1990, pp.41-72
- Saito, Kohei. 2018. *Capital, Nature, and the Unfinished Critique of Political Economy*. New Delhi: Dev Publishers.
- Sarkar, Saral. 1999. *Eco-socialism or Eco-Capitalism*. London: Zed Books.
- Schelling, F.W.J. 1978. *System of Transcendental Idealism (1800)*. Translated by Peter Heath. Charlottesville: Uni. of Virginia Press.
- Streeck, Wolfgang. 2014. *Buying Time: The Delayed Crisis of Democratic Capitalism*. Translated by Patrick Camiller. London: Verso. p.91.
- Supiot, Alain. 2012. "Under Eastern Eyes." *New Left Review*, 73: 29-36.
- Tainter, Joseph A. 1988. *The Collapse of Complex Societies*. Cambridge: Cambridge University Press.
- Ulanowicz, Robert E. 1997. *Ecology: The Ascendent Perspective*. New York: Columbia University Press.
- Ulanowicz, Robert E. 2009. "An Ecological Metaphysic." *A Third Window: Natural Life beyond Newton and Darwin*, ch.6. West Conshohocken: Templeton Foundation Press.
- White, James D. 1996. *Marx and the Intellectual Origins of Dialectical Materialism*. Houndmills: Macmillan.
- Williams. Robert R. 1997. *Hegel's Ethics of Recognition*. Berkeley: University of Chicago Press.