

Faulty Presuppositions and False Dichotomies: The Problematic Nature of “the Anthropocene”

Christopher R. Cox

I. Introduction

Capital originates in nature, then is reconstituted through socio-ecological transformations into a supposedly extra-natural phenomenon, identified as “social,” “economic,” “political,” or other such category meant to be analyzed as “society” or “nature.” “This or that” is always a dangerous proposition, for binary regimes of truth are frequently the backdrop of systems of oppression, and repression of thoughts and ideas that do not fit within the either/or logic they depend upon. This dominant view of the humanity–nature relationship, or the interaction between humans and the *rest* of nature, is one that treats humanity and nature as divided domains of critical inquiry, causing an ontological rift between a “human reality” and a “natural reality.” It is nothing new, but yet it persists.

This false dichotomy is what I refer to as the *human/nature divide*. It is a regime of truth that makes epistemic inconsistencies over time and space that are historically difficult, if not impossible, to transcend. Admittedly, it is a further reduction from the more well-worn concept of the “nature/society binary,” or “nature” (nature without humans) and “society” (humans without nature),¹ but the view put forward in this article is not to be interpreted as reductionist in the broad sense of looking for the simplest explanation. Regardless of which binary we choose to identify it, the ontological notion that humans are extra-natural and nature extra-human set the stage long ago for the systematic exploitation of all human and

1. Jason W. Moore, “Ecology, Capital, and the Nature of Our Times: Accumulation & Crisis in the Capitalist World-Ecology,” *Journal of World-Systems Research* 17, no. 1 (2011): 108–47.

extra-human natures. Unlimited accumulation of capital is a holographic reality, only plausible if humans are seen as the beneficiaries of nature's "bounty," and extra-nature as the beneficiary of humanity's waste.

The *Anthropocene*, as argued by Crutzen, McNeil, et al., serves as a prime example of a largely uncontested concept that tacitly presupposes the acceptance of the human/nature divide. The Anthropocene that we are led to believe began with the English Industrial Revolution of the eighteenth century, since the point—1780 to be exact—at which humanity became the greatest threat to the Earth system.² This essay rejects that general diagnosis, arguing that the anthropogenic view of *the* Industrial Revolution is fatally flawed. The anthropocentric argument that humanity is overwhelming the planet leaves out of the analysis the ecological transformations through which capitalism has evolved. Equally troubling is the fact that the Anthropocene argument does not take the capitalist world-system, or the capitalist, to task in the development of ecosystemic and atmospheric destruction over time and space. Instead, humanity as a whole is scapegoated.

Drawing upon Jason W. Moore's claim that capitalism is a *world-ecology* joining the "production of nature and the accumulation of capital in a dialectical unity," the Anthropocene argument ought to, but does not, offer a challenge to the human/nature divide, making the role of that argument questionable in critical politico-ecological analysis. Anthropogenic discourse and analysis, by seemingly accepting the view that humanity acts *upon* nature, rather than *within* and *through* it—as a "web of life"—reaffirms much of the same binary thought patterns that have contributed to the record of ecological crisis that is the history of capitalism. Thus, a critical analysis of the Anthropocene leads to a reworking of the social scientific obsession with outcomes over processes. The anthropogenic interpretation of the Industrial Revolution is a case in point.

The Anthropocene argument is complicated by another major historical-relational weakness, yet one still related deeply with industrialization.³

2. There is in fact very little agreement among historians regarding when exactly the Industrial Revolution began, and even more disagreement on how to describe it. What Paul Crutzen, John McNeil, Will Steffen, and others view as the Industrial Revolution is merely the culmination of the extractive prowess of what Braudel called the "machine revolution" (Fernand Braudel, *Civilization and Capitalism, 15th–18th Century*, vol. 3, *The Perspective of the World* [New York: Harper & Row Publishers, 1982–84], p. 535).

3. For the remainder of this essay, I will refer to the "Anthropocene argument" as that argued by Paul Crutzen, Will Steffen, John McNeil, and many other biological and physical scientists.

The claim that “coal transformed the world,”⁴ cannot be taken seriously scientifically, socially, or materially, for it completely avoids the socio-ecological process of how coal became a source of cheap energy. To suggest that coal transformed the world (often understood as industrial age capitalism transformed the world) is to gloss over a long historical unfolding of ecological revolutions that involved labor relations, and relations of power in human society, beginning in the mid-1400s. This fixation upon what Braudel argues is the most recent in a line of “four successive Industrial Revolutions,”⁵ or the late English Industrial Revolution, that forms much of the foundational claim of the Anthropocene is inherently inadequate, for it rests on a very narrow geological linearity in its interpretation of a complex set of socioeconomic relations among humans *in nature*—relations that, more accurately, transformed coal. Coal was nothing more than millions of years of fossilized energy before it began to be dug up and burned. While humans are in fact the species that did this, a hard-nosed focus upon the “productive forces of society,” argues Matthew T. Huber, leads to a fetishization of energy “as a thing-in-itself with singular independent casual powers over the economy, history, and power,” leaving energy itself “devoid of its political, social, and cultural content.”⁶ In other words, coal is just coal, but relations of labor, territorialization through capital accumulation, and the nearly six-hundred-year history of dominant liberal economic ideology fueled the transformation of coal as flammable rock to fossil energy.

Geological chemist Paul Crutzen once responded to the question of how he wants to be remembered by saying: “As the person who significantly increased knowledge about the processes that determine the distribution of ozone in the atmosphere.”⁷ From this statement, one would assume that by “processes” Crutzen is speaking not only of geological processes over the millennia but of human geospatial relations as well. However, the central claim of the Anthropocene is that “Humanity is overwhelming the great forces of nature.”⁸ To be sure, the Industrial Revolution—if we assume it

4. Will Steffen, Paul J. Crutzen, and John R. McNeill, “The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature,” *AMBIO: A Journal of the Human Environment* 36, no. 8 (2007): 614–21.

5. Fernand Braudel, *A History of Civilizations* (New York: Penguin Books, 1995), p. 374.

6. Matthew T. Huber, *Lifeblood: Oil, Freedom, and the Forces of Capital* (Minneapolis: Univ. of Minnesota Press, 2013), p. 11.

7. Paul J. Crutzen, “Anthropocene Man,” *Nature* 467, no. 7317 (2010).

8. Steffen, Crutzen, and McNeill, “The Anthropocene.”

is a unified, progressive phenomenon that occurred on a discernible time line—was a dramatic acceleration of the extractive forces of the capitalist world-system, but it was a world-system already steadfastly in place, thanks to “systemic cycles of accumulation”⁹ over the *longue durée*, leading to today’s obvious crisis of accumulation.

Physarum Polyphalum, or “brainless slime mold,”¹⁰ utilizes what ecologists call an “external memory,”¹¹ allowing it to avoid continuously returning to the same feeding areas it already visited. It is this external memory that makes slime mold so efficient and only minimally destructive to its ecological environment. Capitalism is like slime mold *with* a brain, congealing around all of its available energy sources, namely, labor exploitation, territorialization, and the extraction of resources that are advantageous to its ordering of nature. It is its own ecosystem, metabolizing whatever it must in order to continue operating, and becoming, as Moore asserts, a *world-ecology*.¹² Nevertheless, the global economic engine is still largely treated as one that operates advantageously differentiated from the natural and the human. This Cartesian myth lies at the root of both ecological and accumulation crises. As long as humans are hierarchically valued above or in any way outside of nature, the capitalist world-ecology will continue to expand, dangerously independent of *ecopolitical reality* and instead tied to a liberal economic mysticism based on fictitious markets and strangely valued commodities.

By re-examining the Anthropocene argument through the lens of a post-Cartesian viewing of nature and utilizing a world-ecological framework, one sees capitalism as world-ecology. Further, this analysis reveals a deep historical inconsistency in the Anthropocene argument: its treatment of *the* Industrial Revolution since the late 1700s as the historical point at which humanity became the greatest threat to the Earth system. A world-ecological interpretation of *the* Industrial Revolution constitutes what is missing in current assessments of world history: “An adequate language

9. Giovanni Arrighi, *The Long Twentieth Century: Money, Power, and the Origins of Our Times* (New York: Verso, 2010).

10. C. R. Reid, T. Latty, A. Dussutour, and M. Beekman, “Slime Mold Uses an Externalized Spatial ‘Memory’ to Navigate in Complex Environments,” *Proceedings of the National Academy of Sciences of the United States of America* 109, no. 43 (2012): 17490–94.

11. *Ibid.*

12. Jason W. Moore, “Transcending the Metabolic Rift: A Theory of Crises in the Capitalist World-Ecology,” *Journal of Peasant Studies* 38, no. 1 (2011): 1–46.

to talk and act and analyze as if humans and the rest of nature mutually constitute each other.”¹³ The Anthropocene argument only intensifies the challenge of arriving at this new way of seeing, and Moore’s *Capitalocene* offers a worthy challenge to it.

II. Industrializations and Environments

A. Starker Leopold once noted, “It is pretty obvious that industrialization is not of itself a panacea for man’s woes, since it tends to create as many problems as it solves,”¹⁴ evidenced by, among other things, the historical record of boom and bust associated with the expansion and contraction of commodity frontiers, “in a remarkably consistent cycle of 50–75 years.”¹⁵ Moreover, humanity as a species did not create these changes. Instead it was specific individuals and certain social forces operating at particular sites. The popular narrative fits well within the confines of historical analysis, for even the supposed originator¹⁶ of the phrase “*the Industrial Revolution*,” Arnold Toynbee, equates the idea with the introduction of the “development of Economic Science in England,”¹⁷ which he attributes to Adam Smith. He also brought to the forefront of debates about mutual dependence of industrialization and competition, arguing:

In the first place it is assumed that all competition is a competition for existence. This is not true. There is a great difference between a struggle for mere existence and a struggle for a particular kind of existence. For instance, twelve men are struggling for employment in a trade where there is only room for eight; four are driven out of that trade, but they are

13. Tom Keefer, “Wall Street as a Way of Organizing Nature: An Interview with Jason W. Moore,” *Upping the Ante: A Journal of Theory and Action* 12 (May 2011): 1.

14. Paul Shepard and Daniel McKinley, *The Subversive Science: Essays Toward an Ecology of Man* (Boston: Houghton Mifflin Company, 1969), p. v.

15. Jason W. Moore, “Dutch Capitalism and Europe’s Great Frontier: The Baltic in the Ecological Revolution of the Long Seventeenth Century,” in Richard E. Lee, ed., *The Longue Durée and World-Systems Analysis* (Albany: State Univ. of New York Press, 2012), p. 88.

16. That distinction actually goes to the French, during the political revolutions of 1789 and 1830, where the new machinery used for cotton-spinning (the “spinning jenny”) and Watts’s invention of the steam engine in 1780 were engaged in an article with the title “Grande Révolution Industrielle.” However, Engels’s famous *The Condition of the Working Class in England* was in fact the first place where the phrase “the Industrial Revolution” was first posited in relation to the idea of a revolutionarily expanded economy and societal organization under capitalism.

17. Arnold Toynbee, *The Industrial Revolution* (Boston: Beacon Press, 1956).

not trampled out of existence. A good deal of competition merely decides what kind of work a man is to do.¹⁸

Meanwhile, the Anthropocene argument is perhaps most noted for its implication that the historical appearance of coal is the marker for when humanity itself became the antagonist in the story of how “spaceship Earth”¹⁹ started to nosedive into the Anthropocene from the relative calm of the Holocene.

In Fernand Braudel’s alternative, and much later, view of the Industrial Revolution, we are reminded that coal is not in and of itself worthy of much singular focus. “There were four successive Industrial Revolutions,” he argues, “each of the last three building on its predecessor’s achievements: that of steam, that of electricity, that of the internal combustion engine and that of nuclear energy.”²⁰ Still, McNeil asserts, it was not the emergence of the capitalist world-system that “transformed the world,” but coal.²¹ In response to this indictment of coal, so central to the argument of the Anthropocene, Jason W. Moore asks, “But is not the inverse formulation more plausible?: *New world-relations transformed coal*. Coal is coal. Only in specific historical relations does it become fossil fuel. . . . This is precisely the line of questioning that has been ruled out by the dominant Anthropocene argument.”²² Coal was transformed from fossil into energy as a result of long-unfolding historical-relational changes, primarily in mining, that started as far back as the thirteenth century in England. Coal would make another appearance at the end of the sixteenth century, as a result of a new economic direction that was, according to John U. Nef, devoted “primarily to the production of cheap wares in ever larger quantities,” which manifested itself “in the North of Europe and above all in Great Britain.”²³ Braudel argues that the Industrial Revolution as it is commonly understood “began or rather became visible in England

18. *Ibid.*, p. 59.

19. Buckminster R. Fuller, *Operating Manual for Spaceship Earth* (Carbondale: Southern Illinois UP, 1969).

20. Braudel, *A History of Civilizations*, p. 374.

21. Steffen, Crutzen, and McNeill, “The Anthropocene.” See also John M. Meyer, *Political Nature: Environmentalism and the Interpretation of Western Thought* (Cambridge, MA: MIT Press, 2001), p. 45.

22. Jason W. Moore, “The End of the Road? Agricultural Revolutions in the Capitalist World-Ecology, 1450–2010,” *Journal of Agrarian Change* 10, no. 3 (2010): 389–413.

23. John U. Nef, *The Cultural Foundations of Industrial Civilization* (New York: Harper & Row Publishers, 1958), p. 50.

in the 1750s or 1760s.”²⁴ History is educating us here. “We can go back to the days before the English industrial revolution and find many instances of industrialization, something which has always been present in human societies.”²⁵

Coal is millions of years of solar energy embedded in the Earth, one of nature’s many ecological surpluses, which became a prized energy source in the long sixteenth century for its ability to support the growing appetite of the capitalist world-system. As a cheap source of energy, it provided the structural fix for the ecological limitations on capitalist exchange in eighteenth-century England. Coal was in fact first discovered accidentally by farmers in England during the thirteenth century as mule-drawn tillers ripped up coal seams that sat just under the soil’s surface.²⁶ Knowing this energy asset was available, the liberal capitalist market demands behind both the “first” and “second” Industrial Revolutions—tied first to cotton and then to textiles—led to the greater use of this fossil fuel.²⁷

Writing as early as 1901, Charles Austin Beard also pointed directly to the actually existing social effects of the Industrial Revolution, which he stated, “opened the way for the production of the means of life without the consumption of all human energy, man, startled and stunned by the sudden changes in the methods of working and living, was unable to organize his life so that all might share in the benefits of the new inventions.”²⁸ The world capitalist system did not grow out of the Industrial Revolution, nor did it originate from some inalienable desire for energy from coal. The quest for capital was already at the center of the desire for “progress” in the form of “technological advancement” in the age of “modernity.” The world-system of capitalism arose “from the most palpable transformations of land and labor issued by the rise of capitalism several centuries earlier,”²⁹ argues Moore, particularly revolutionary changes in the production of

24. Braudel, *Civilization and Capitalism*, 3:536.

25. *Ibid.*

26. John U. Nef, *The Conquest of the Material World: Essays on the Coming of Industrialization* (Cleveland: Meridian Books, 1967).

27. Immanuel Wallerstein, *The Modern World-System*, vol. 3, *The Second Era of Great Expansion of the Capitalist World-Economy, 1730–1840s* (San Diego: Academic Press, 1989).

28. Charles Austin Beard, *The Industrial Revolution: Primary Source Edition* (London: Swan Sonnenschein & Co., LIM, 1901), p. 2.

29. Jason W. Moore, “Environmental Crises and the Metabolic Rift in World-Historical Perspective,” *Organization and Environment* 13, no. 2 (2000): 123–57.

commodities. These changes include, but are far from limited to, “the agricultural revolution of the Low Countries (c. 1400–1600),”³⁰ as well as the “metallurgical revolution of Central Europe”³¹ and “the movement of the African ‘slaving frontier’ from the Gulf of Guinea to Angola and the Congo in the later 16th century, marking the first of several major expansions in the slave trade,”³² world-ecological and historical events that are of primary importance to a relational understanding of historical capitalism. The development of capitalism over the long haul is as much about massive changes in territorialization of labor and production as it is the technological advancement that made it possible. Capitalism, thus, developed *through* politically staged socio-ecological transitions.

The Anthropocene argument, as made by Will Steffen, Paul Crutzen, and John McNeil, rarely if ever mentions capitalism, much less assigns any blame or systemic importance to it as a mechanism of global ecological destruction. Putting the blame for the Earth system’s demise at the feet of humanity writ large, without any in-depth analysis of the development of capitalism as a world-system over the *longue durée*, is dangerous, ultimately leading to the straw-man argument that humans, for the first time in all of history, have become “a global geophysical force.”³³ Was it humans, undifferentiated, who suddenly became a global geophysical force in the eighteenth century, or was it the global system of capitalism, a system that tyrannically organizes all human and extra-human nature in support of commodification? Further, is it all humans or is it a small minority of humans that deserve the blame? After all, the Industrial Revolution, as it is understood by “the Anthropocenic,”³⁴ is not a humanity-level phenomenon but an English world-economic phenomenon.

The existing *ecological crisis* is often addressed in mainstream and even *green* environmental politico-economic theory as a problem of material flows and the subsequent depletion of “ecosystem services,” a line of logic that is staggeringly anthropocentric. A strict focus upon the finitude of the planet’s natural resources—which, in the case of nature as understood in this essay, includes human resources—can lead to a simplified

30. Ibid.

31. Ibid.

32. Ibid.

33. F. A. Jonsson, “The Industrial Revolution in the Anthropocene,” *Journal of Modern History* 84, no. 3 (2012): 679–96.

34. This is a term I am using to identify those who seemingly uncritically accept the Anthropogenic presuppositions.

argument based solely on materials, letting the socioeconomic relations of capital accumulation, and societal organization in its image, off the hook. What must accompany analyses of material flows are historical-relational analyses of the productive relationships extant within humanity, relations that have evolved over the *longue durée*.³⁵ Capitalism must be more accurately referred to *not* simply as an economic system but as a world-ecology that organizes society in service to the endless accumulation of capital.³⁶

Implicit in the material flows argument, or the focus upon the finitude of paying close attention to the Earth system's available resources, is a tacit negation of the interrelations of political power, the accumulation of wealth (money power) in nature, relations that changed dramatically with the fall of feudalism in Europe circa 1450, "the relations that made possible the long fossil boom of the past two centuries."³⁷ The *fossil fuel boom* to which Moore refers is simply another name for "the Industrial Revolution." If the Industrial Revolution were to be interpreted in this way, the Anthropocene argument would be far stronger, for it would be based in a spatial-temporal frame that is more closely aligned with the historical-industrializational buildup that began far longer ago than what Hartwell called "the classical Industrial Revolution,"³⁸ the same two-century view that the Anthropocene argument portends. In other words, "the Industrial Revolution" is the direct result of hundreds of years of *indirect* outcomes of the *direct* changes in human organizational patterns *within* nature. The enduring complexity of these relations are often avoided by the (neo)liberal economic narrative of the Industrial Revolution as what Wrigley argued it was *not*, "a unitary, progressive, integrated phenomenon,"³⁹ a viewpoint that leads to the confusion of outcomes with origins of processes. The Industrial Revolution, if we are to assume it

35. A concept used most notably by Fernand Braudel, denoting a plurality of social times, according to Richard E. Lee. It went on to be used in world-systems analysis by Wallerstein, interpreted as the duration of particular historical systemic movements.

36. Argument is gleaned from a talk given by Jason W. Moore entitled "Capitalism as World-Ecology," YouTube, <http://www.youtube.com/watch?v=qr799S-caHs>.

37. Jason W. Moore, "Anthropocene or Capitalocene? The Value of Nature and Nature of Value in the Capitalist World-Ecology," unpublished paper, Department of Sociology, Binghamton University.

38. R. M. Hartwell, "Was There an Industrial Revolution?" *Social Science History* 14, no. 4 (1990): 567–76.

39. E. A. Wrigley, *Continuity, Chance and Change: The Character of the Industrial Revolution in England* (Cambridge: Cambridge UP, 1988), p. 132.

includes the lesser industrializations over the *longue durée* of history is anything but unitary, progressive, or integrated.

As Wallerstein once said, “We are accustomed to organizing our knowledge around central concepts which take the form of elementary truisms.”⁴⁰ This belief in the linear progressiveness of economic and technological growth that began in the mid-eighteenth century is one such “elementary truism” that is taken to task by the world-ecology approach to historical capitalism and economic history more generally, building upon themes established by Marx, Braudel, and Wallerstein. We are urged to think about the expansion of the commodity, resource, and energy frontiers as both “vertical” (down into the earth) and “horizontal” (out across the earth),⁴¹ in an effort to bypass the false notion that “industrial capitalism” (as though that is somehow different from capitalism) developed overnight in some “revolutionary” manner, a notion reified *ad infinitum* by the two-century model of *the Industrial Revolution*.

The implicit acceptance of the human/nature divide in the narrative of historical capitalism, even by would-be ecological Marxists, serves as an aid to the continued looping of this false historicity. Without the presupposition, capital accumulation can no longer be examined as external to its ecological implications. Ecological crises existed long before capitalism, which is made quite evident by the crises that were under way in the long fourteenth century, marking the end of feudalism in England and the appearance of the European world-economy, the precursor to what would ultimately be understood by Wallerstein et al. as the capitalist world-system.⁴² The transition from feudalism to capitalism was an ecological transition, marked by a crisis of accumulation emerging from limited reinvestment of surpluses into agricultural regeneration, while still favoring population growth and density as a method of capital generation. Moore argues, “The accumulation of capital and the production of nature are distinct rather more than discrete categories, so intertwined as to make the one unthinkable without the other,”⁴³ alluding to the idea that everything, including capitalism, happens *in nature*, and that humanity and the global ecosystem are ineluctably intertwined. Current and historical

40. Wallerstein, *The Modern World-System*, 3:3.

41. Moore, “The End of the Road?” p. 389.

42. Jason W. Moore, “The Crisis of Feudalism: An Environmental History,” *Organization & Environment* 15, no. 3 (2002): 301–22.

43. Moore, “Transcending the Metabolic Rift.”

capitalism, and its dependence upon not only unlimited accumulation but the continued state-supported technological advancement of such means of accumulation (e.g., mountaintop removal, shale oil, fracking, etc.), makes addressing the human relations that spawned the movement toward industrialization nearly impossible.

The Anthropogenic's argument gets this point completely backward, asserting that humanity undifferentiated is the problem, as opposed to the relations within humanity, humanity as inclusive of nature. Moore states:

From the perspective of productivity and plunder, we can better identify the continuities of capitalist history. The Industrial Revolution marked not a rupture with, but *an amplification of*, early capitalism's commodity frontier logic. It was a dramatic amplification, to be sure. But the historical geography of the commodity frontier—appropriating cheap natures in the service of advancing labor productivity—had governed the accumulation process in early capitalism, and would continue to govern the accumulation during and after the Industrial Revolution. Before Industrial Revolution, appropriate nature and advance labor productivity. After Industrial Revolution, appropriate nature and advance labor productivity.⁴⁴

This is the context in which Moore asks the question “Anthropocene or *Capitalocene*?”⁴⁵ I do not have a definitive final answer, but what seems clear is that the Anthropocene argument is sorely lacking in its ability to treat the problem of humanity as a problem of the production of nature, instead always opting for the convenient view of the Earth system as being hierarchically controlled by humans, or at least acted upon by humans.

Nobody can dispute that humans are at the center of the action in regard to the increasing extraction of natural resources and the expelling of carbon dioxide into the atmosphere. But are humans not also the victims of a system that grew out of the control of the vast majority of them? Beard addresses this puzzle head on when he notes that the Industrial Revolution did not just bring a respite from the ravages of self and family maintenance in the “state of nature”:

It called into existence suddenly the factory towns, with their want of corporate life, their vile sanitary conditions, and filthy hovels. Men were

44. Moore, “Anthropocene or Capitalocene?”

45. Ibid.

forced rapidly into new relations, in which the old formulae, maxims, and moralisings became useless and void. The old economic order and basis of life were swept away, and in the confusion—"the wreck of matter and crush of worlds"—it seemed as if man had become utterly powerless to adjust himself to the new conditions, to conquer and control them as he had the forces of Nature. For a while after this industrial convulsion, and the demolition of the old order, man seemed paralyzed.⁴⁶

If only Beard were right, that man had become paralyzed. Unfortunately for the men Beard describes, their paralysis was of little importance to the greater project.

"The precise date of onset of the Anthropocene is arguable," write Robin and Steffen, "but Crutzen set it to coincide approximately with James Watt's invention of the steam engine in 1784, because of analyses of air trapped in polar ice that dated the rapid growth of carbon dioxide and methane concentrations to the late eighteenth century. The Anthropocene is not just a new way to look at the past; it strongly affects the future."⁴⁷ If this is the case, then how does the Anthropocenic deal with the very simple conundrum that humans existed, in organized society, long before this rather arbitrary point? The intrinsic coding of the Industrial Revolution—as collective intentional human project, or a systemically driven world-ecological regime—must be re-examined in the Anthropocene argument before humanity itself, differentiated from nature, can logically be pointed to as the driving force of rising levels of carbon dioxide. What changed about human organization on the planet at the time of the invention of Watt's steam engine? What did not change?

If we follow the Anthropocene thesis, we are seemingly left with a view of capitalism that starts with the late English Industrial Revolution of the eighteenth century. This false historicity is tacitly accepted by many mainstream historians of economics and capitalism, and dutifully perpetuated by today's neoliberal analyses. More importantly, we are left with an ever more Cartesian view of the relationship between humanity and the *rest* of nature. The false Cartesian binary of "humanity *and* nature" versus "humanity *in* nature" is an ontological position that makes the project of transcending the endlessness of ecological crises, and therefore the capitalist world-system itself, a futile battle. The futility can be overcome

46. Beard, *The Industrial Revolution*, pp. 2–3.

47. Libby Robin and Will Steffen, "History for the Anthropocene," *History Compass* 5, no. 5 (2007): 1694–1719.

if we utilize the longest view of history, challenging the techno-historical viewpoint of capitalism, one that subsists on a selective, disjointed view of historical time that seems to only start in the middle of the eighteenth century.

III. The Rift in Natural/Social Metabolisms

It is worth engaging briefly the work of John Bellamy Foster and his *theory of metabolic rift*. While problematic in some significant ways, it is nevertheless complementary to the framework suggested here. The conceptual framework of Moore's "capitalism as world-ecology" developed partially out of the often overshadowed ecological foundations of the Marxian canon, which Foster's work has gone to great lengths, quite successfully, to recover. However, there is a sharp contrast between the *world-ecology synthesis*⁴⁸ and the *metabolic rift* approach in regard to viewing nature. Where the *metabolic rift* viewpoint takes a "humanity *and* nature" ontological position, the *world-ecology* viewpoint adopts a post-Cartesian view of nature, or a "humanity *in* nature" ontology.

Marx's "theory of metabolic rift," as identified by Foster, is instructive in regard to the slippery slope of the human/nature binary.⁴⁹ In suggesting that Marx argued for a rift between "humanity and nature," as opposed to between "humanity and the laws of nature," Foster brings into the dialectic another Cartesian divide, in this case between the problems of ecological crises and accumulation crises,⁵⁰ both of which are intimately connected on numerous fronts but analyzed as separate phenomena. With some conceptual overreach, the "metabolic rift" framework paints a picture for Marxian ecology that treats capital as somehow extra-human *and* extra-natural, as though it constitutes its own independent material reality, not unlike "the economy." Not only does this play into the liberal vision of treating nature as exogenous to society, but it also can lead to the notion that there is a grand metabolism between humans and nature as discrete spaces.

48. This is the term Jason W. Moore has given to his developing methodology.

49. John Bellamy Foster, "Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology," *American Journal of Sociology* 105, no. 2 (1999): 366–405; John Bellamy Foster, *Marx's Ecology: Materialism and Nature* (New York: Monthly Review Press, 2000), ch. 5; John Bellamy Foster, "Metabolism, Energy, and Entropy in Marx's Critique of Political Economy: Beyond the Podolinsky Myth," *Theory and Society* 35 (2006): 109–56.

50. Moore, "Transcending the Metabolic Rift."

Metabolic rift, as put forward by Foster, is, according to Moore, a project that puts heavy emphasis on “agriculture, global warming, and resource consumption,” which is undoubtedly of the utmost concern to any critical analysis of the ecological crises of our time. However, “to stop there, and to treat the accumulation of capital and capitalism’s remaking of human natures as exogenous, is to miss the greatest promise of the metabolic rift perspective—the transition from environmental histories *of*, to capitalism *as* environmental history.”⁵¹ In failing to make the post-Cartesian jump, the metabolic rift viewpoint misses a crucial opportunity to revise the history of capitalism in a way that challenges the false historicity of the Anthropocene argument.

To suggest that capitalism created a rift between humanity and nature is to suggest that nature and humanity were mutually constitutive before capitalism and ceased to be after its advent. Did not capitalism arise from humans acting *in* nature, as a response to ecological limits to the perceived necessity of economic growth? Were corn and the potato the chosen sources of sustenance for the “industrial army” of the working poor merely for their nutritional value? It was, after all, Marx who reminded us, “All production is appropriation of nature on the part of an individual within and through a specific form of society.”⁵² In describing Marx’s much more ecological approach to the human–nature interchange, Foster explains that Marx placed emphasis upon the “interaction between humanity and nature, or what he was eventually to call the ‘metabolism’ of humanity with nature, through production.”⁵³

Where Marx saw humanity interacting *with* nature in the process of the production and reproduction of the means of subsistence, humanity is interacting *within* nature, production being in that sense part of nature, not an affectation or an exogenous creation. Thus, the metabolic rift approach does not go far enough, because it negates its possible role in developing a vocabulary that allows us to see the history of capitalism as environmental history. Capitalism has evolved *through*, not in spite of, socio-ecological transformations. Was it capitalism that caused the Dutch in the 1500s to bring in wood from Norway for ship-building? Arguably not, since it was instead the depletion of what little hardwood forest the Dutch had, in the

51. Moore, “Ecology, Capital, and the Nature of Our Times.”

52. Karl Marx, “The *Grundrisse*,” in *The Marx-Engels Reader*, ed. Robert C. Tucker (New York: W. W. Norton & Company, 1978), pp. 221–93.

53. Foster, *Marx’s Ecology*, p. 114.

form of a geospatial fix to ecological constraints, constituting a horizontal expansion where a vertical one was no longer possible. “Starting in the 1550s,” notes Moore, “sawmills spread like wildfires as the Dutch advanced into southern Norway. Nowhere to be found less than a century before, there were over 500 mills by the end of the sixteenth century.”⁵⁴ It is also important that we examine the concept of “metabolic rift” a bit more before we move on, because one implicit assumption of the Anthropocene is its faulty assumption that man acts *upon* nature versus *in* nature, bolstered by the Cartesian view of the human–nature interchange that Foster engages in his interpretation of the “metabolic rift” in the Marxian canon.

The interactive relationship between human and extra-human nature, the dance between matters, is the root of what Marx referred to as *social metabolism*, or *Stoffwechsel*,⁵⁵ when describing the “social metabolism”⁵⁶ of the commodity exchange process from those who have no use for said commodities to those who do, from the worker to the potential user of the commodities produced by labor-power. This is, for Marx, not only an exchange between laborer and purchaser, but initially between raw matter (extra-human nature) and humanity (nature inclusive of humans); it is the process of humans shaping matter into useful objects through the utilization of their own labor power. Simply put, the interaction between human matter and non-human matter can be examined as a *metabolic relationship* that exists between the human and the non-human, or between the sentient and its negation. The discursive paradigm of metabolic relations between “town and country,” as Marx understood it, is a very useful platform for learning to view capitalism as world-ecology, as it was the intended case study for Marx’s use of the phrase “metabolic rift.” *Stoffwechsel* is the most evident start to Marx’s underlying knowledge framework of humanity’s interactive relationship with nature, but it is equally necessary to look, if only briefly, at the associated concept of *rift*. The term *rift* occurs but once in all of Marx’s writings, but its meaning is central to third volume of *Capital*:

[On the other hand] large landed property reduces the agricultural population to an ever decreasing minimum and confronts it with an ever

54. Jason W. Moore, “‘Amsterdam is Standing on Norway’ Part II: The Global North Atlantic in the Ecological Revolution of the Long Seventeenth Century,” *Journal of Agrarian Change* 10, no. 2 (2010): 188–227.

55. Karl Marx, *Capital*, vol. 1 (London: Penguin Classics, 1990), p. 198.

56. *Ibid.*

growing industrial population crammed together in large towns; in this way it produces conditions that provoke an irreparable rift in the interdependent process of social metabolism, a metabolism prescribed by the natural laws of life itself.⁵⁷

The *irreparable rift* addressed in this passage is easily interpreted in ways not clearly meant by Marx. Differentiation among the modes of production and the relations of labor between town and country is engaged head on by Marx, but what remains in question is if he was also asserting that this rift constituted a break in what could be understood as a grand metabolism between two discrete systems. This antagonism created by what today we might call a rural to urban labor migration, a metabolic relationship that was evident as far back as the 1300s, is what Marx pointed to as the *irreparable rift* in the metabolism between society and the *natural laws of life itself*. In other words, the rift is between humans and the laws of nature, not between humanity and nature writ large.

For Marx, everything happens *in* nature and nothing happens *outside* of nature. This is the fundamental *rift*, if you will, between Foster's *theory of metabolic rift* and what might more accurately be called Marx's *theory of social metabolism*. Marx asserts that "large landed property"⁵⁸ leads inevitably to the increasing rate of reduction of the agricultural population to "an ever decreasing minimum,"⁵⁹ creating an "irreparable rift" between town and country, for the agricultural populations of the country are increasingly pushed into towns, a process still underway. This makes the case brilliantly clear, for Marx, that it is the onset of the ownership of large swaths of arable land that created the *rift* in the metabolism between town and country. It is, however, questionable whether this is a *rift* or merely an intensification of the extractive essence of the capitalist mode of production *in* nature, or the way in which capitalism "organizes all of nature"⁶⁰ to its systemic benefit. It is also in this sense that the Industrial Revolution is more accurately seen as a great intensification of the extractive and exploitative forces of the capitalist world-economy.

Marx explains that the capitalist form of production in general "annihilates the bulwark of the old society, the 'peasant,' and substitutes for him

57. Karl Marx, *Capital*, vol. 2 (London: Penguin Classics, 1991), p. 949.

58. *Ibid.*

59. *Ibid.*

60. Taken from a talk given by Moore entitled "Capitalism as World-Ecology," YouTube, <http://www.youtube.com/watch?v=qr799S-caHs>.

the wage-labourer.” Ultimately pushing hurriedly through the “technological application of science,” the traditional soil-dependent workers are expelled from the countryside and into the towns, leading to a disturbance in the “metabolic interaction between man and the earth.”⁶¹ And perhaps most importantly, this disturbed metabolic interaction prevents the “return to the soil of its constituent elements consumed by man in the form of food and clothing.”⁶² This is how and where the metabolic rift between the soil and its reconstitutive elements is created through commodification.

This sentiment about capitalism’s strange dependency upon the commodification of everything, what Marx referred to as the *fetishism of the commodities*, is echoed in the work of Karl Polanyi. “What we call land is an element of nature inextricably interwoven with man’s institutions,” he argued. “To isolate it and form a market for it was perhaps the weirdest of all the undertakings of our ancestors.”⁶³ Similarly, Moore writes:

To take the Nature/Society binary as a point of departure confuses the origins of a process with its results. The plethora of ways that human and biophysical natures are intertwined at every scale—from the body to the world market—is obscured to the degree that we take nature and society as purified essences rather than tangled bundles of human- and extra-human nature.⁶⁴

The idea that society is divorced, or at least treated as separate, from nature leads to a sense of randomness in outcome, a randomness that regimes of knowledge like capitalism utilize in the process of systemic reification. Put more bluntly, Lewontin and Levins state that the assumption of randomness, both in the ecological sense and in the societal sense, leads to “a justification for a reactionary passivity.”⁶⁵

Passivity and unwillingness to question the underlying assumptions of capitalism has created an “environmentalism” that argues that the proverbial market is where humans ought to draw the will, politically and

61. Marx, *Capital*, 1:637.

62. Ibid.

63. Karl Polanyi, *The Great Transformation* (New York: Farrar & Rinehart, Inc., 1944), p. 187.

64. Moore, “Ecology, Capital, and the Nature of Our Times.”

65. Richard Lewontin and Richard Levins, *Biology Under the Influence: Dialectical Essays on Ecology, Agriculture, and Health* (New York: Monthly Review Press, 2007), p. 27.

otherwise, to engage in the process of repairing the ecological damages that the assumption of endless capital accumulation brings. It is nothing short of *environmental capitalism*. Put another way by Andrew Dobson, “Environmentalists will usually be concerned about ‘nature’ only so far as it might affect human beings; ecologists will argue that the strong anthropocentrism this betrays is more a part of our current problems than a solution to them.”⁶⁶ The seemingly endless push and pull between ecological Marxists and deep green ecological thinkers proves to be unhelpful in finding a non-market approach to dealing with the socio-ecological conjuncture of our current global state of affairs. “Environmentalism,” undifferentiated, has become little more than a subscription to the dystopia where, miraculously, capital can accumulate endlessly and all of humanity can profit from minimal attendance to the various global crises inherent in the capitalist world-ecology. Such schemes as carbon trading, carbon taxation, and government incentives for “environmentally sustainable” investment and production, while all possessing good intentions, do little to nothing to challenge the inherent contradiction of capitalism—growth that can continue regardless of the condition of the Earth system.

IV. World-Ecology and the Human/Nature Divide

Michel Foucault suggested that truth is “a thing of this world: it is produced only by virtue of multiple forms of constraint... each society has its regime of truth, its ‘general politics’ of truth.”⁶⁷ The *human/nature divide* is a “regime of truth” that forms a core tenet of the global capitalist organization of nature. The general common wisdom that humanity exists quasi-independently of nature is rather uncritically accepted by the Anthropocenes, robbing the narrative of its ability to foster the kind of critical theoretical praxis needed in this precarious moment in world history.

Paul Crutzen argues that “[t]he phenomenon of global change represents a profound shift in the relationship between humans and *the rest of nature*.”⁶⁸ The Anthropocene, it would seem from that statement, is not simply the term “that suggests that the Earth has left its natural geological epoch,”⁶⁹ the Holocene, but a new knowledge framework that brings

66. Andrew Dobson, *Green Political Thought* (London: Routledge, 1990), p. 189.

67. Michel Foucault, *Power/Knowledge: Selected Interviews and Other Writings*, trans. Colin Gordon et al. (New York: Pantheon Books, 1980), p. 131.

68. Steffen, Crutzen, and McNeill, “The Anthropocene,” p. 614, emphasis added.

69. *Ibid.*

with it a view of nature as all-inclusive, urging humanity to see itself as an active participant in the operation of the Earth system. However, the main drift in his Anthropocene argument points toward a fetishization of the late Industrial Revolution, resulting in a two-century-long apparatus for thought that misconstrues all of the revolutions in social-ecological human relations that led up to that point in history, with coal and steam as the artifacts of humanity's assault on the earth.⁷⁰

The methodology of theoretical formulation is bound in the development of a clean, easily understood and applied explanation of a complex problem. Marx's *social metabolism*, Foster's *metabolic rift*, and Moore's *capitalist world-ecology* certainly offer nothing in the way of simplifying the complexity of the challenge that I have suggested we engage by critically interpreting the human/nature divide. However, it is questionable whether or not simplification of a complex problem is always the most fruitful venture; perhaps it is complexity we must seek when faced with complex problems.

Complexity aside, Moore's world-ecological treatment of capitalism allows for the analysis of the Industrial Revolution, and indeed world-history writ large, as encased in the ecological paradigm. It offers, in short, a much needed *ecological world-history of capitalism*. Moore argues:

Ecology is typically used interchangeably with a series of terms that are familiar to all of us—nature, the environment, and so forth. It does not usually include human activity, for which we reserve a whole series of other familiar terms—culture, economy, society, and politics. At the same time, most of us now understand that there is no culture, economy, society, or politics that operates independently of biological and geo-physical relations; the web of life. This includes the ways that our bodies articulate with other humans and the rest of nature.⁷¹

The problem of the human/nature divide, I argue, is at the very center of the “web of life” on which Moore is focusing. The eventual task is to operationalize a way of thinking that challenges it.

The *world-ecology synthesis*, as it is referred to by Moore, points to capitalism as not merely an economic system but, again, as a system for organizing all of nature, inclusive of both the human and non-human. The organizational capacity of capitalism is deeply reflected in the work of

70. Taken from conversations with Jason W. Moore.

71. Keefer, “Wall Street as a Way of Organizing Nature.”

Arrighi, who in 1978 stated: “The history of capitalism tells us that the periodic recurrence of crises is not a function of . . . ‘mistakes’ in economic management. . . . The tendency toward crisis is indissolubly linked to the existence of capitalism itself.”⁷² In calling for a language that allows us to talk about humans and nature as though they are mutually co-determined, Moore is inviting complexity, and rightly so, for it is quite clear that most politico-economic arguments about how to handle the problem of capitalism and its ecological discontents have failed miserably to challenge the most fundamental of all binary constraints, the collective hallucination of a divide between humanity and nature. Perhaps the term *Capitalocene* is indeed a preferable name for this new epoch that Steffen, Crutzen, and McNeil assert is upon us. After all, is it not the quest for capital accumulation that has caused humanity to become the great threat that the Anthropocenes presume it to be?

The human/nature divide is a subtle regime of thought, in the form of a Cartesian construct that aids in the reification of the capitalist world-system, by making ecology exogenous to humanity. It is only possible for humans to think of ourselves as separate from nature if nature is made eternal slave to humanity. The endless accumulation of capital through geospatial fixes can only continue if humanity is consistently analyzed independently of nature. One logical step in the direction of transcendence of the human/nature divide, a theoretical praxis perhaps, is to challenge arguments that are mired in vulgar binaries with ones that are not.

The Anthropocene argument further divides humanity and nature through its reliance upon a historically limited view of the Industrial Revolution, one that fails to acknowledge the root causes of the environmental degradation that the Anthropocenes point to as evidence of humanity’s overburdening of the planetary system. Often focusing on outcomes at the expense of origins of processes—a problem not uncommon to naturalist conceptions of social scientific phenomena—the Anthropocenes tend to miss the system, only seeing its parts. The entire world-economic system under which the seventeenth- and eighteenth-century Industrial Revolution flourished, was based upon what Eric Williams called “triangulated trade” between England, France, and Colonial America. England “supplied the exports and the ships; Africa the human merchandise; America the plantations, the colonial raw materials. The slave ship sailed from the

72. Giovanni Arrighi, “Toward a Theory of Capitalist Crisis,” *New Left Review* 1, no. 111 (1978): 3–24.

home country with a cargo of manufactured goods⁷³ and stolen human labor. Again, we see that the Industrial Revolution cannot be pointed to as some turning point at which humanity, undifferentiated, became the biggest threat to the Earth system, but to a great acceleration of the extractive capabilities of the capitalist world-system, a system dependent upon the overvaluation of unpaid labor (slavery) and the undervaluation of paid labor. Humanity is the slave of a system developed and maintained by a small minority of its members who have transformed coal; transformed oil; transformed gas; and transformed the available mechanisms of reproducing the means of subsistence. It is this system that must be examined if we are to transcend the Anthropogenic definition of humanity as unmitigated threat. And this can only be done if the human/nature divide is challenged intellectually.

It is in this sense that the “theoretical praxis” suggested here is perhaps best understood as one that is, to utilize a term from the work of Guattari, *ecosophical*.⁷⁴ Guattari writes of the recurring “nagging paradox” between “techno-scientific means to potentially resolve the dominant ecological issues and reinstate socially useful activities on the surface of the planet, and, on the other hand, the inability of organized social forces and constituted subjective formations to take hold of these resources in order to make them work.”⁷⁵ There is no techno-scientific path to adequately awakening humanity at large to the conundrum of the human/nature divide, as it has been treated in this essay. However, just like the dark matter and dark energy of the universe that is responsible for so much more than we can see with our own eyes, the intellectual energy that theorists put forward in an effort to rid ourselves of harmful regimes of truth, can and does effect material outcomes throughout nature.

V. Conclusion

As difficult, if not impossible, as it would likely be to somehow coerce humanity into a wholesale dismantling of the human/nature divide, its possible transcendence, theoretically or otherwise, ought to be a prime intellectual emergency. The Anthropocene concept brings with it a seemingly

73. Eric Williams, *Capitalism and Slavery* (Chapel Hill: Univ. of North Carolina Press, 1994), p. 51.

74. Félix Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton (London: The Athlone Press, 2000), p. 24.

75. *Ibid.*, p. 22.

endless array of new questions regarding how to address the growing range and depth of ecological crises, but it does not suggest, in its name or in the arguments of its staunchest adherents, a new way of seeing. It remains highly questionable whether or not Crutzen, McNeil, and other proponents of the Anthropocene project actually intend to suggest anything in regard to what ought to be done about the impact of capitalism upon the Earth system. The current view of the Anthropocene is, therefore, little more than a geological marker in modern world history, the point at which, they say, humans became the most serious threat to the earth system. The view put forward in this essay is an attempt to overturn that assumption, instead pointing to the time at which humanity became captivated by the capitalist world-system through mechanisms of vertical and horizontal expansionary fixes for ecological constraints to endless accumulation of capital.

Obviously, this reordering of foundational knowledge that depends upon the human/nature divide is no small feat. That said, human capacity for change is as easily documented as human capacity for fear of change. Mark Bevir writes, “The subject positions that a discourse creates derive not from pre-discursive social relations or biological facts, but from political strategies and the structural relations between concepts in discourses.”⁷⁶ It seems now that the question that must be collectively asked, and debated the world over, is how will our political and social regimes of truth be made to address the needs of humanity while adequately addressing the needs of the global ecosystem. The luxury of slow, incremental change is one such luxury that neither humans nor non-humans any longer possess.

Complexity is the name of the game when examining the socioecological impacts of capitalism and humanity. Embracing complexity in many European or North American academic traditions is not only rare but also actively suppressed. Lewontin and Levins write, “While it is ever more important to approach problems in a broad transdisciplinary, complex, and theoretical way, the political economy of research pushes us toward ever narrower research and teaching programs. The investors in science demand profitable results in the shortest possible time.”⁷⁷ In short, capital subsumes the research programs of otherwise objective thinkers. That may have played a role in why the dominant Anthropocene arguments seem to

76. Mark Bevir, “Political Science after Foucault” *History of the Human Sciences* 24, no. 4 (2011): 81–96.

77. Lewontin and Levins, *Biology Under the Influence*, pp. 184–85.

shy away from pointing toward capitalism as a driving force of nature, as an organizing agent *within* nature.

In seeing capitalism as a world-ecology, theoretical frameworks can take on a much more assertive role in the development of new knowledges, or ways of seeing, that bridge the human/nature divide. The Anthropocene is no such new knowledge. In fact, it takes an old, out-of-date, and historically inadequate narrative of the Industrial Revolution and coal and steam as its main premise. There can be no doubt that an epochal shift took place, even if there are debates about when exactly it started, but what caused this shift? Perhaps Moore answers this question best: “Two words: coal and steam. The driving force behind coal and steam? Not class. Not capital. Not imperialism. Not even culture. But . . . you guessed it, the *Anthropos*. Humanity as an undifferentiated whole.”⁷⁸ It cannot be left there, however. We must now begin to rethink the epoch in which we have been for five-hundred years, the epoch of the Capitalocene.

78. Jason W. Moore, *Ecology and the Accumulation of Capital* (New York: Verso, 2014).