

## COVID-19 and the Planetary Crisis Multiplicity: From Marxist Crisis Theory to Planetary Assemblage Theory

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### Abstract

The COVID-19 crisis gives us occasion to reflect on the insights and limitations of Marxist crisis theory in an era of converging political-economic and ecological crises. While ecological Marxists in particular have made incisive analyses of these crises, I will argue that traditional Marxist frameworks are insufficient for conceptualizing 21<sup>st</sup> century global crises, which emerge from complex material entanglements across multiple socio-ecological systems and take on self-organizing dynamics that exceed human agency. I will therefore suggest that an encounter between ecological Marxism and Deleuzian assemblage theory can provide a more productive theoretical foundation for understanding the COVID-19 crisis and mapping what I call the broader “planetary crisis multiplicity.”

### Introduction

The travels of a microbe have catalyzed convulsions across the capitalist world system, precipitating one of its largest crises in history. We still remain in the early phases of this event, the ramifications and cascading consequences of which we can only speculate at present, though it appears to constitute what Paul Raskin calls a “rupture in historic time that shakes the continuity of institutions and consciousness.”<sup>1</sup> The COVID-19 pandemic has set in motion a set of feedbacks between microbial ecologies, public health systems, financial markets, supply-chains, food and energy systems, climate change, and democratic institutions that will dramatically shape the future of capitalism and world order. Yet it is merely one actualized expression of what we could call a broader “planetary crisis multiplicity,” or an “architecture of global crisis”<sup>2</sup> that unfolds

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<sup>1</sup> Paul Raskin, “After the Pandemic: Which Future?” *Great Transition Initiative* (2020). available at <https://greattransition.org/gti-forum/pandemic-scenario-raskin> [Accessed 7 July 2020].

<sup>2</sup> Thomas Homer-Dixon et al, “Synchronous Failure: the emerging causal architecture of global crisis”, *Ecology and Society* 20, no. 3 (2015): 1-15.

through a complex, multi-scalar, and spatiotemporally uneven structure of socio-ecological assemblages linking the earth and capitalist world systems. In short, we confront a planetary crisis that is both singular and multiple, a convergence between political-economic, geological, climactic, ecological, and public health crises that is more than the sum of its parts and which manifests through diverse spatiotemporal expressions.<sup>3</sup> Understanding the causal drivers and dynamics of this planetary crisis multiplicity, how it may unfold in the coming years and decades, and how differentially positioned class/race/gender subjects and (counter)-hegemonic movements may navigate and respond to it, is one of the key theoretical challenges of the present.

Despite the deterministic and “sociocentric”<sup>4</sup> tendencies of their forebears, contemporary Marxist approaches have provided some of the most insightful analyses of the emerging planetary crisis. In particular, the burgeoning subfield known as “ecological Marxism” has pushed forward Marxist and world-systems analysis by recovering the ecological dimensions of Marx’s *Capital* and using this as a renewed theoretical basis from which to analyze the multiple crises of the present, from the structural crisis of global capitalism to climate change, mass extinction, food and energy crises, and pandemics.<sup>5</sup> While it is not without its own internal debates and tensions, ecological

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<sup>3</sup> While I will often speak of *the* planetary crisis, it should be borne in mind that this singularity is simultaneously a multiplicity.

<sup>4</sup> Referring to approaches that explain social processes and events with reference to social factors alone. See William Connolly, *Facing the Planetary: Entangled Humanism and the Politics of Swarming* (Durham: Duke University Press, 2017), 15.

<sup>5</sup> James O’Connor, *Natural Causes: Essays in Ecological Marxism* (New York: Guilford Press, 1997); John Bellamy Foster, *Marx’s Ecology: Materialism and Nature* (New York: Monthly Review Press, 2000); Noel Castree, “Marxism and the production of nature,” *Capitalist Class* 24, no. 3 (2000): 5-36; Neil Smith, *Uneven Development: Nature, Capital, and the Production of Space* (Athens: University of Georgia Press, 2008); John Bellamy Foster, Brett Clark, and Richard York, *Ecological Rift: Capitalism’s War on the Earth* (New York: Monthly Review Press, 2011); Jason Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (London: Verso, 2015); McKenzie Wark, *Molecular Red: Theory for the Anthropocene* (London: Verso, 2015); Ian Angus, *Facing the Anthropocene: fossil capitalism and the crisis of the earth system* (New York: Monthly Review Press, 2016); Andreas Malm, *The Progress of This Storm: Nature and Society in a Warming World* (London: Verso, 2018); Brian Napoletano et al, “Has (even Marxist) political ecology really transcended the metabolic rift?” *Geoforum* 92 (2018): 92-95; John Bellamy

Marxists begin from the premise that the capitalist world system should be understood as a socio-ecological metabolic order in which economic production and exchange are dialectically entwined with transformations in local and global ecologies. Furthermore, they argue that our contemporary crises are manifold expressions of capital's core imperative to organize socio-ecological relations towards the primary end of exchange-value maximization (rather than use value, sustainability, resilience, public health, well-being, etc.), resulting in a socially and ecologically unsustainable compound growth trajectory alongside creatively destructive transformations of the earth system – from the molecular scale of microbial ecologies to the planetary scale of anthropogenic (or rather “capitalo-genic”) climate change.

There should be little doubt that Marxist approaches make vital contributions to the theoretical task of understanding the historic roots of our contemporary era of converging crises, anticipating their possible trajectories, and formulating collective responses grounded in the demands of social and environmental justice. However, I will suggest that an encounter between ecological Marxism and Deleuzian assemblage theory (particularly its complexity theory-inspired reconstruction in the work of Manuel Delanda and John Protevi) can provide a more productive theoretical foundation for understanding the COVID-19 crisis and mapping the broader planetary crisis multiplicity.<sup>6</sup> While

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Foster and Intan Suwandi, “COVID-19 and Catastrophe Capitalism: Commodity Chains and Ecological-Epidemiological-Economic Crises,” *Monthly Review* 72, no. 2 (2020): 1-20; Rob Wallace, Alex Liebman, Luis Fernando Chaves, and Rodrick Wallace, “COVID-19 and Circuits of Capital: New York to China and Back,” *Monthly Review* 72, no. 1 (2020): 1-16; Andreas Malm, *Corona, Climate, Chronic Emergency: War Communism in the Twenty-First Century* (London: Verso, 2020).

<sup>6</sup> In particular see Gilles Deleuze and Felix Guattari, *A Thousand Plateaus*, Trans. Brian Massumi (New York: Continuum, 2004); Manuel Delanda, *A New Philosophy of Society: Assemblage Theory and Social Complexity* (London: Continuum, 2006); Manuel Delanda, *Assemblage Theory* (Edinburgh: Edinburgh University Press, 2016); John Protevi and Mark Bonta, *Deleuze and Geophilosophy: A Guide and Glossary* (Edinburgh: Edinburgh University Press, 2004); John Protevi, *Life, War, Earth: Deleuze and the Sciences* (Minneapolis: University of Minnesota Press, 2013).

Marxists at their best provide incisive analyses of these crises, they are often limited by a form of systems theory grounded in 19<sup>th</sup> century dialectics, which bequeaths a rigid understanding of systems as organic “totalities” in which their parts are functionally subsumed by the whole.<sup>7</sup> For more “sociocentric” or non-ecological Marxists this often leads to uni-dimensional analyses of the contemporary crisis conjuncture, focusing on crises that are “internal” to the circuit of capital (i.e. “economic” crises). For ecological Marxists, on the other hand, it either generates an excessively rigid analytic separation between “society” and “nature” (and thereby between economic and ecological crises) as simultaneously differentiated and unified totalities; or in an excessively homogenized image of the planetary crisis where capitalism has subsumed the biogeophysical totality of the earth, making it impossible to speak of distinct “economic” and “ecological” (or other) crises.

Overall, while both tendencies within ecological Marxism capture important elements of truth in their conceptualizations of the relations between capitalism and the earth, their conceptual frameworks have so far constrained their capacities to analyze and anticipate the socio-ecological crisis configurations emerging from the climate-financial-economy-energy-food-health nexus. In short, traditional Marxist categories are insufficient for conceptualizing 21<sup>st</sup> century global crises, which emerge from complex material entanglements between political-economic, ecological, food, energy and microbial assemblages at different scales and take on self-organizing dynamics that exceed human agency or intentionality, in this way unleashing surprising cascades of events that can only be understood and reconstructed in their wake. Thus we need a new

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<sup>7</sup> Peng Cheah, “Non-Dialectical Materialism,” In Diana Coole and Samantha Frost (eds) *New Materialisms: Ontology, Agency, and Politics* (Durham: Duke University Press, 2010), 70-91.

“crisis theory” that is indebted to while going beyond Marxist approaches by integrating them with the work of complexity theorists, ecologists, energy and food system scholars, radical epidemiologists, and others investigating the “emerging architecture of global crisis.”<sup>8</sup> I will argue that an engagement between ecological Marxism and assemblage theory can facilitate such a synthesis, since the latter is more attuned to the intricate and unruly material entanglements in which global capitalism is enmeshed; respects the relatively autonomy of these diverse assemblages and their hybrid human/non-human agencies; and emphasizes the openness, contingency, and unpredictability of crisis trajectories (though without ignoring their structural political-economic determinants). As Marxism evolves to encompass the material feedbacks between the global system of capital accumulation and the climactic, geological, microbial, and biotic assemblages upon which it supervenes and throughout which it dissipates its entropy, there is more space for mutually fruitful encounters with Deleuzian assemblage theory and other approaches that fall under the broad banner of “new materialism.”

I will begin with an overview of Marxist approaches to the contemporary planetary crisis, focusing primarily on ecological Marxism. I will then discuss their limitations before shifting to discussion of an alternative approach based on assemblage theory, which I call “Planetary Assemblage Theory.” Finally, I will demonstrate how this approach can provide a more nuanced mapping of 21<sup>st</sup> century global crises and their spatiotemporally uneven structure linking political-economic, food, energy, and ecological assemblages, with specific focus on the 2007-08 “Great Financial Crisis” (itself much more than a financial crisis) as well as the COVID-19 crisis.

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<sup>8</sup> E.g. Homer-Dixon et al, “Synchronous Failure”; Wallace et al, “COVID-19 and Circuits of Capital”; See also Nafeez Ahmed, *Failing States, Collapsing Systems: Biophysical Triggers of Violence* (Cham: Springer, 2017).

## **Marxist Crisis Theory: From Traditional to Ecological Marxism**

Traditional Marxist crisis theory begins from an analysis of the inner “contradictions” of capital accumulation, which are structural antagonisms or conflicting tendencies that can be shifted around and temporarily attenuated though without being fully resolved.<sup>9</sup> It is as a result of these contradictions that capitalism enters periodic “crises” that force the system to adapt and restructure. Marx claimed that capitalist crises arise from “the concentration and forcible adjustment of all the contradictions of bourgeois economy,”<sup>10</sup> which occur when the circuit of capital accumulation and reinvestment are blocked. As David Harvey explains, this can be the result of several potential barriers, including insufficient financial capital, scarcities or difficulties with the labor supply, inadequate technology or “natural resources”, or lack of demand in the market.<sup>11</sup> Economic growth then slows or goes into reverse, and “there appears to be an overaccumulation of capital relative to opportunities to use that capital profitably.”<sup>12</sup> Thus the key crises of interest for Marxists are those involving an internal disruption of the circuit of capital accumulation, which can take the form of a “profit squeeze” (where high wages and/or “ruinous competition” drive prices down), “crises of overproduction” (insufficient demand to realize the value of produced commodities), “crises of underproduction” (insufficient energy or raw materials to sustain the requirements of expanded production), or financial crises (widespread debt defaults followed by credit

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<sup>9</sup> David Harvey, *Seventeen Contradictions and the End of Capitalism* (Oxford: Oxford University Press, 2014), 3-4.

<sup>10</sup> Quoted in Harvey, *Seventeen Contradictions*, xiii.

<sup>11</sup> David Harvey, *The Enigma of Capital and the Crises of Capitalism* (Oxford: Oxford University Press, 2010), 47.

<sup>12</sup> *Ibid.*, 45.

tightening).<sup>13</sup> Some Marxists also distinguish between “cyclical crises”, referring to periodic downswings in the business cycle that don’t require any major systemic structuring; “structural crises” in which a specific “accumulation regime” is no longer able to sustain growth, thereby forcing organizational, technological, and geographical transformations that form the basis of renewed growth trajectory; and “systemic crises” in which an historic mode of production is unable to resolve a structural crisis, thereby collapsing or transforming into a qualitatively novel form of political-economic organization.<sup>14</sup>

This framework gives us deep insight into the origins and dynamics of capitalist crises, from the 1930s Great Depression and Stagflation crisis of the 1970s to the 2007-08 Financial Crisis and subsequent stagnation. Yet this framework often results in a sociocentric reading of the current planetary crisis conjuncture that focuses primarily on the political-economic and financial crises of capitalism, often ignoring their biophysical and ecological dimensions or at best seeing them as “external stressors.”<sup>15</sup> The world-system theorists Immanuel Wallerstein and Giovanni Arrighi, for example, believe that global capitalism may be confronting a systemic crisis created by an exhaustion of opportunities for expansion, rising costs to the system as a whole, and the inability of a

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<sup>13</sup> Harvey, *Enigma of Capital*, 116; O’Connor, *Natural Causes*, 129. See also Sarel Sarkar, *The Crisis of Capitalism: A Different Study of Political Economy* (Berkeley: Counterpoint, 2012), 3-34.

<sup>14</sup> William Robinson, “The Crisis of Global Capitalism: Cyclical, Structural, or Systemic?” In Konings & Sommers (eds) *The Great Credit Crash* (London: Verso, 2010), 289-310. Immanuel Wallerstein, “Structural Crisis in the World System: where do we go from here?” *Monthly Review* 62, no. 10 (2011), available at <https://monthlyreview.org/2011/03/01/structural-crisis-in-the-world-system/> [Accessed 11 November 2019].

<sup>15</sup> Marxist accounts of the contemporary structural crisis of capitalism that focus primarily or solely on political-economic factors include: Wallerstein, “Structural Crisis”, William Robinson, *Global Capitalism and the Crisis of Humanity* (Cambridge: Cambridge University Press, 2014); Giovanni Arrighi, *Adam Smith in Beijing: Lineages of the Twenty-First Century* (London: Verso, 2009); Wolfgang Streeck, *How Will Capitalism End? Essays on a Failing System* (London: Verso, 2017); John Smith, *Imperialism in the Twenty-First Century: Globalization, Super-Exploitation, and Capitalism’s Final Crisis* (New York: Monthly Review Press, 2016).

new hegemon to restore systemic stability.<sup>16</sup> However, they don't consider the climactic, energetic, microbial, and other ecological foundations of the capitalist world-system and how they will shape (and perhaps ultimately determine) its crisis trajectories. Similarly, William Robinson, Wolfgang Streeck, and John Smith focus primarily on the structural crisis of capitalism arising from unprecedented inequality and the dominance of transnational finance, whereas problems like climate change, energy depletion, and food system vulnerabilities are either ignored or approached as background "stressors."<sup>17</sup> In this way, following an analysis of capitalism that conceives it as a "totality" or closed system, Marxists are often led to focus primarily on the dynamics of global capitalist expansion rather than situating capitalism as one particular system embedded within a broader space of intersecting climactic, geological, microbial, and infrastructural systems. The crisis dynamics of interest are therefore conceived to be those "internal" to the circuit of capital, whereas crises originating in the domains of climate, extreme weather, biodiversity collapse, agriculture, geological depletion, pandemics, etc. are conceived as "external" shocks that are largely outside or peripheral to Marxist analysis.

Moving beyond these limitations, ecological Marxists have begun to develop a more comprehensive understanding of the dynamics of capitalism and its crises that integrate their ecological dimensions. Ecological Marxism has a complex history with various conflicting viewpoints,<sup>18</sup> but for our purposes we can pick out two different

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<sup>16</sup> Wallerstein, "Structural Crisis"; Giovanni Arrighi, *Adam Smith in Beijing: Lineages of the Twenty-First Century* (London: Verso, 2009).

<sup>17</sup> William Robinson, *Global Capitalism and the Crisis of Humanity* (Cambridge: Cambridge University Press, 2014); Wolfgang Streeck, *How Will Capitalism End? Essays on a Failing System* (London: Verso, 2017); John Smith, *Imperialism in the Twenty-First Century: Globalization, Super-Exploitation, and Capitalism's Final Crisis* (New York: Monthly Review Press, 2016).

<sup>18</sup> For a useful overview of the evolution of ecological Marxist thought, see John Bellamy Foster and Paul Burkett, *Mark and the Earth: An Anti-Critique* (Chicago: Haymarket Books, 2016).

approaches or tendencies. The first follows Friedrich Engels's efforts to formulate a "dialectics of nature", which develops a stratified ontology of relatively autonomous geological, biological, ecological, and social processes, understanding how the latter emerge from and are conditioned by the former.<sup>19</sup> The second, on the other hand, follows Neil Smith's concept of the "production of nature", arguing that capitalism is not simply a social order that interacts with and degrades an external "Nature" but in fact aims to *produce* nature and to a significant extent *subsumes* it within its reproduction process, such that any notion of relative autonomy becomes anachronistic.<sup>20</sup>

The first approach, developed by John Bellamy Foster, Paul Burkett, McKenzie Wark, Ian Angus, Andreas Malm, and others aims to develop synthesis between Marxism and scientific materialism, which was developed in germinal form in Engels's *Dialectics of Nature*. As J.B.S. Haldane describes, this philosophy "lays particular emphasis on the interconnection of all processes, and the artificial character of the distinctions which men have drawn...between the different fields of human knowledge such as economics, history, and natural science."<sup>21</sup> Foster and Burkett call Engel's *Dialectics of Nature* a "precursor of contemporary complexity theory,"<sup>22</sup> since it attempts to develop a general systems framework to understand processes of self-organization at all scales of nature and the emergence of progressively differentiated levels from more ancient levels. In this approach, scholars look beyond the internal crises of capitalism to investigate how the

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<sup>19</sup> J.B.S. Haldane, "Forward," In Friedrich Engels (author) *Dialectics of Nature*, Trans. Clemens Dutt (New York: International Publications, 1940); Foster, *Marx's Ecology*; Foster et al, *Ecological Rift*; Wark, *Molecular Red*; Angus, *Facing the Anthropocene*; Malm, *Progress of This Storm*; Napoletano et al, "Has (even Marxist) political ecology"

<sup>20</sup> Smith, *Uneven Development*; Moore, *Capitalism in the Web of Life*; Castree, "Marxism and the production of nature"; Harvey, *Seventeen Contradictions*.

<sup>21</sup> Haldane, "Forward," xv

<sup>22</sup> John Bellamy Foster and Paul Burkett, "Metabolism, energy and entropy in Marx's critique of political economy: Beyond the Podolinsky myth," *Theory and Society* 35 (2006): 111.

dynamics of capital accumulation generate ecological crises, emphasizing how “ecological cycles and flows are disrupted or even ruptured, as capital attempts to bend material reality to the ceaseless accumulation of an immaterial substance (value).”<sup>23</sup> The concept of “metabolic rift” is key to this understanding of ecological crisis, which Marx used to refer to the disruption of soil nutrient cycles resulting from the massive diversion of nutrient-rich waste products into burgeoning industrial capitalist cities.<sup>24</sup> Ecological Marxists generalize this concept to explain the multiple disruptions in the earth’s biogeochemical cycles catalyzed by global capitalist expansion – including the carbon, nitrogen, phosphorous, hydrological and other cycles.<sup>25</sup> In this way, rather than making climactic, geological, and ecological processes peripheral to Marxist analysis, these ecological Marxists foreground the earth systemic consequences of untrammled capital accumulation and warn that this may precipitate “a potential terminal event in geological evolution that country destroy the world as we know it”, with the primary danger being “the accelerating tempo of change in the earth system, overwhelming natural-evolutionary processes and social adaptation.”<sup>26</sup>

In contrast, the second strand of ecological Marxism rejects the idea of relatively autonomous geological and ecological systems in favor of the thesis that capitalism *produces* nature according to its own rhythms and imperatives. In this view, while the existence of a pre-human nature shaped by physical laws is not denied, it emphasizes how capitalism has so powerfully transformed the multiple dimensions of the earth system that it is meaningless now to speak of an “external nature” with its own dynamics

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<sup>23</sup> Napoletano et al (2018) ‘Has (even Marxist) political ecology,’ 93.

<sup>24</sup> Foster, *Marx’s Ecology*, 163.

<sup>25</sup> Foster et al, *Ecological Rift: Wark, Molecular Red*.

<sup>26</sup> Foster et al, *Ecological Rift*, 18, 35.

independent of social forces. For example, Noel Castree critiques what he considers the “dualistic mind-set” implicit in Engels’s emphasis on “nature’s dialectical laws, its non-identity with humanity and its relative autonomy.”<sup>27</sup> Similarly, Neil Smith problematizes accounts of nature as “external to society, pristine and pre-human...with the development of capitalism, human society has put itself at the center of nature.”<sup>28</sup> This translates into a form of “crisis theory” in which there is no longer a distinction between “economic” and “ecological” crises but rather a *singular* conception of crisis that integrates both moments. Jason Moore, for example, problematizes the language of “converging crises,” instead arguing that we are not facing “a crisis of capitalism *and* nature but of modernity-*in-nature*.”<sup>29</sup> Moore’s work is inspired by James O’Connor’s work on the “second contradiction” of capitalism, which moved beyond traditional Marxist crisis theory and its focus on the internal circuit of exchange-value towards an analysis of the ecological preconditions of accumulation.<sup>30</sup> Moore takes from O’Connor an emphasis on “how nature *works for* capitalism” rather than on “what capitalism *does to* nature,”<sup>31</sup> though he radicalizes this approach in the direction of new materialist thinking by rejecting the distinction between “Nature” and “Society” tout court. In this sense, rather than a separate capitalism-in-crisis acting on, depleting and destroying an external Nature, Moore argues that capitalism *is* a specific “historical-nature” that has reached its historical limits, thereby paving the way for the emergence of new historical-natures.<sup>32</sup> David Harvey makes a similar argument, claiming that “the ‘nature’ we are supposedly

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<sup>27</sup> Castree, “Marxism and the production of nature,” 14.

<sup>28</sup> Smith, *Uneven Development*, 7.

<sup>29</sup> Moore, *Capitalism in the Web of Life*, 2-4.

<sup>30</sup> O’Connor, *Natural Causes*, 127-129.

<sup>31</sup> Moore, *Capitalism in the Web of Life*, 27.

<sup>32</sup> *Ibid.*

exploiting and then which supposedly limits or takes ‘revenge’ on us is actually internalized within the circulation and accumulation of capital...Capital *is* a working and evolving ecological system.”<sup>33</sup> These thinkers therefore push back against what they see as “catastrophist” narratives of looming ecological apocalypse and resource depletion by other ecological Marxists, arguing that a radically non-dualist approach provides a more hopeful narrative of the coming crisis as an opportunity to “produce nature” differently.<sup>34</sup>

### **Beyond Ecological Marxism**

To simplify and condense the key difference between these two strands of ecological Marxism, we could say that the *Dialectics of Nature* tradition views capitalism and its crises as merely one level of a stratified though dialectically entwined ontology of relatively autonomous geological, ecological, and social processes, with capitalism being the primary source of disruption in these other components of the earth system. The *Production of Nature* tradition, on the other hand, elevates capitalism beyond the level of the social totality to encompass the biogeophysical totality of the earth, making it misleading to speak of relatively autonomous “levels” or distinct “ecological” and “economic” crises. Both approaches make valuable insights, though we can probe their respective weaknesses in a way that can point towards a theoretical alternative.

Beginning with the *Production of Nature* approach, these scholars clearly capture an important element of truth in their claims that capitalism has subsumed and irrevocably transformed the earth’s biogeochemical processes. Indeed, the emerging ontological condition of the “Anthropocene” (or “Capitalocene” in ecological Marxist

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<sup>33</sup> Harvey, *Seventeen Contradictions*, 247.

<sup>34</sup> Moore, *Capitalism in the Web of Life*, 86; Harvey, *Enigma of Capital*, 73-74.

accounts) clearly signifies, as Damian White and colleagues write, that “there can be no going back to a dualist political ecology: We are all hybrid now.”<sup>35</sup> Yet the notion that capitalism “produces” nature may downplay the creative, unruly, and often intransigent agencies of non-human processes by subsuming them within (a broadened conception of) capitalism’s “laws of motion.” In particular, the limits of Moore’s attempt to flatten the historical dynamics of capitalism and natural processes into a single dialectic are made evident by his dismissal of the potentially cataclysmic implications of the contemporary earth system crisis: “Too often...the revenge of nature appears as impending cataclysm, and too rarely as a ‘normal’ cyclical phenomenon of capitalism.”<sup>36</sup> Similarly, Harvey appears to downplay the existential threats posed by climate change and resource depletion, claiming that his approach “appears to deny the possibility of any out-and-out or prolonged, let alone ‘final’, environmental crisis,”<sup>37</sup> whereas “if there are specific impending scarcities of this or that resource, we are smart enough to find resource substitutes.”<sup>38</sup> While both scholars make reasonable points about the potential for human agency to re-shape our local and global ecologies through alternative socio-ecological practices, their approach risks exaggerating both capitalism and humanity’s capacities to reshape the earth to their desired ends while obscuring the earth’s relatively autonomous agency in determining a new biogeophysical epoch. As Isabelle Stengers argues, this means we may need to conceptualize the “Anthropocene” not merely in terms of how humanity has “produced” nature but rather as an “intrusion of a form of transcendence into our history...a ticklish assemblage of forces that are indifferent to our reasons and

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<sup>35</sup> Damian White, Brian Gareau, and Alan Rudy, “Ecosocialisms, Past, Present and Future: From the Metabolic Rift to a Reconstructive, Dynamic and Hybrid Ecosocialism,” *Capitalism Nature Socialism* 28, no. 2 (2017): 34.

<sup>36</sup> Moore, *Capitalism in the Web of Life*, 79-80.

<sup>37</sup> Harvey, *Enigma of Capital*, 74.

<sup>38</sup> Harvey, *Seventeen Contradictions*: 260.

our projects.”<sup>39</sup> While Moore, Harvey, and others would resist the language of “transcendence” here, Stengers is right that we need to respect the wildly unpredictable agency of the climate system (along with the myriad “tipping elements” in the earth system<sup>40</sup>), which, as Andreas Malm says, may be “the greatest, most elusive, least subsumable autonomous system humans can possibly tinker with.”<sup>41</sup> Failure to appreciate this agency can generate complacency and over-confidence in the powers of humanity to simply “produce” nature differently (or to continuously innovate our way out of depleting energy, food, water, raw materials, etc.), leading either to the technocratic view that we can geoengineer our way out of the climate crisis, or a naïve socialist view that abolishing capitalist social relations will *by itself* take care of the problem.

It is for this reason that some version of the *Dialectics of Nature* perspective, which emphasizes the relative autonomy of climate, geological, ecological, and political-economic processes, appears to be necessary. As Foster and Burkett write, as opposed to a “flat ontology” in which “everything is seen as existing on a single plane, and constantly intermixed and conflated – mere networks or webs without clear demarcations”, this approach can be considered a “dialectical critical realism that emphasizes complexity, mediation, and integrated levels.”<sup>42</sup> This perspective may downplay the ontological messiness and entanglements that confound efforts to cleanly demarcate social and ecological “levels” of analysis, though it has the advantage of respecting the relatively autonomous agency of geological formations, microbes, biotic assemblages, and climate dynamics. Furthermore, it is more amenable to inter-

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<sup>39</sup> Isabelle Stengers, *In Catastrophic Times: Resisting the Coming Barbarism* (Paris: Open Humanities Press, 2015), 47-48.

<sup>40</sup> Tim Lenton et al, “Climate tipping points – too risk to bet against,” *Nature* 575 (2019), 592-595.

<sup>41</sup> Malm, *Progress of this Storm*, 205.

<sup>42</sup> John Bellamy Foster and Paul Burkett, “Value Isn’t Everything,” *Monthly Review* 70, no. 6 (2018), 11.

disciplinary efforts to synthesize the diverse forms of knowledge needed to understand and navigate our era of planetary crisis, whereas the *Production of Nature* tradition tends to involve more superficial (if any) engagement with the earth system sciences while creating an “imperialist” stance that claims Marxism (again) as the foundational key for understanding the biogeophysical totality.<sup>43</sup>

However, while the *Dialectics of Nature* tradition points us in the right direction, we can improve upon their analysis by developing a theoretical alternative that is better able to capture the socio-ecological hybridity, multi-dimensional feedbacks, and spatiotemporal unevenness that characterizes our current planetary conjuncture. In particular, like their traditional Marxist predecessors, these ecological Marxists depict capitalism as a “totality”, albeit merely one totality in “an objective, external reality comprised of multiple totalities”, where the relation between society and nature can be “described as an internally differentiated totality, or unity of opposites, in which humans are a form of nature differentiated to, but united with, itself.”<sup>44</sup> In this sense, ecological Marxists carry on an organicist form of systems theory in which society emerges from nature, though they both form distinct “totalities” that interact as relatively closed systems separated by a “metabolic rift.” Again, like the *Production of Nature* argument, this perspective carries an important element of truth in that “society” can be considered an *emergent* assemblage with its own unique dynamics and capacities, though it creates an excessively sharp analytic separation between social and ecological totalities (or “levels” of analysis)<sup>45</sup> that does not do conceptual justice to the ontological messiness

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<sup>43</sup> McKenzie Wark’s critique of Jason Moore is in this sense on point. See McKenzie Wark, “The Capitalocene: On Jason Moore,” In *Public Seminar* (15 October, 2015), available at <https://publicseminar.org/2015/10/the-capitalocene/> [Accessed 17 July 2020].

<sup>44</sup> Napoletano et al, “Has (even Marxist) political ecology,” 93.

<sup>45</sup> E.g. Foster and Burkett, “Value Isn’t Everything”

and hybridity of the planetary real, and which is largely responsible for the suspicion among critics that their approach remains “dualist.”<sup>46</sup>

While this framework may be usefully read as an ontological simplification that nonetheless enables analytically useful insights (e.g. the capacity to clearly demarcate between societal and natural contributions to climate change),<sup>47</sup> in practice it also appears to constrain ecological Marxist analyses of 21<sup>st</sup> century global crises and their complex socio-ecological, multi-scalar, and spatiotemporally uneven dynamics, giving them limited capacity to analyze our contemporary era of intersecting climate-economic-financial-food-energy-public health crises.<sup>48</sup> For example, while Foster speaks of a “convergence of economic and ecological contradictions,” he does not explore the complexities of *how* these crises will converge – instead describing the crises of capitalism and the earth system in isolation from each other.<sup>49</sup> The same is true of other “methodologically dualist”<sup>50</sup> ecological Marxists, who focus on how the earth system crisis will “afflict people and other species outside of the capitalist class and its circuits of accumulation.”<sup>51</sup> It is certainly essential to foreground these impacts, but without understanding how non-human forces like climate, collapsing ecosystems, the depletion of high-quality resources, and disease vectors will intersect with the crises of capitalism, these scholars not only constrain their analytic grasp of the complex multi-assemblage

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<sup>46</sup> See Moore, *Capitalism in the Web of Life*, 75-76; White et al, “Ecosocialisms, Past, Present, and Future”; Castree, “Marxism and the production of nature”.

<sup>47</sup> Malm, *Progress of this Storm*, 61.

<sup>48</sup> Though the COVID-19 crisis is starting to push them further towards a more hybrid complex systems analysis. See especially Foster and Suwandi, “COVID-19 and Catastrophe Capitalism”.

<sup>49</sup> John Bellamy Foster, “The Epochal Crisis,” *Monthly Review* 65, no. 5 (2013), 1. Also see his co-authored work on the structural crisis of global capitalism, which doesn’t the ecological dimensions of this crisis: John Bellamy Foster and Robert McChesney, *The Endless Crisis: How Monopoly-Finance Capital Produces Stagnation and Upheaval from the USA to China* (New York: Monthly Review Press, 2013).

<sup>50</sup> Napoletano et al, “Has (even Marxist) political ecology,” 93.

<sup>51</sup> Malm, *Progress of This Storm*, 190.

configurations of 21<sup>st</sup> century global crises, but may also over-estimate the resilience of global capitalism in an era of climactic, ecological, and microbial turbulence.<sup>52</sup>

Moore, following O'Connor, is therefore right to go beyond these approaches by integrating an analysis of how problems like climate change, biodiversity collapse, and resource depletion can disrupt processes of capital accumulation and potentially precipitate a “systemic” (or terminal) crisis of capitalism. However, his approach also remains limited by the Hegelian-Marxist heritage of totality: instead of a complex multiplicity of interwoven crises, he identifies a “singular crisis...with manifold expressions...emanating from a singular civilizational project: the law of value as a law of Cheap Nature.”<sup>53</sup> This conceptualization is fair in the sense that none of the key dimensions of the contemporary planetary crisis – from climate to energy, food, finance, and public health – can be understood or resolved in a just manner without foregrounding the emergent causal agency of capital. However, it risks creating a homogenized image of our planetary crisis and reproduces some of the same problems we saw with traditional Marxist crisis theory: capitalism has now become the biogeophysical totality, and the crises of interest are again primarily those that disrupt the accumulation and circulation of capital. Hence Moore primarily frames problems like climate change, biodiversity collapse, famine, etc. as forms of “negative value” (i.e. costs for capital) rather than crises in their own right that disrupt (relatively autonomous) socio-ecological assemblages, and he undertakes very limited engagement with scientific analyses of these problems to model their relatively autonomous dynamics.<sup>54</sup>

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<sup>52</sup> e.g. Malm, *Progress of This Storm*, 190; Napoletano et al, “Has (even Marxist) political ecology”, 93.

<sup>53</sup> Moore, *Capitalism in the Web of Life*, 298.

<sup>54</sup> Moore, *Capitalism in the Web of Life*, 98. See also Moore, Jason (2015) Cheap Food and Bad Climate: From Surplus Value to Negative Value in the Capitalist World-Ecology. *Critical Historical Studies* 2(1): 1-43.

Overall, while ecological Marxism begins to integrate Marxist analyses of capitalism with a broader ontology of non-human forces and socio-ecological relations, it remains constrained either by an excessively “flat” ontology that subsumes all of nature within the dynamics of capital accumulation, or that sustains an overly rigid analytic separation between distinct political-economic and ecological crises. In contrast, I propose that an engagement between ecological Marxism and Deleuzian assemblage theory presents a productive way forward, since the latter provides an alternative way of thinking about “systems” that respects the relative autonomy of their parts, appreciates their socio-ecological hybridity (rather than sharply distinguishing between “social” and “natural” “levels”), and foregrounds the complex material entanglements between political-economic, climate, geological, and biotic processes that “enable events in one ‘ecodomain’ to precipitate events in another.”<sup>55</sup> The result would be a theoretical framework that integrates the insights of Marxism and assemblage theory, which I call “Planetary Assemblage Theory.” This approach follows new materialism, Actor Network Theory, and others who emphasize the hybridity of political-economic-food-energy-ecological-microbial assemblages through which material life is produced and reproduced, though without subsuming the relatively autonomous agency of these various material processes under the sign of capital (and without ignoring the emergent structural causality of the latter). Furthermore, it develops a form of “crisis theory” that does not either focus solely on political-economic crises deemed “internal” to the logic of capital or that analytically separates political-economic and ecological crises, but that maps the intricate causal relations between climate, political-economic, financial, energy, food, and

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<sup>55</sup> Diana Coole and Samantha Frost, “Introducing the New Materialisms,” In Diana Coole and Samantha Frost (eds) *New Materialisms: Ontology, Agency, and Politics* (Durham: Duke University Press, 2010), 18.

microbial assemblages in order to anticipate the complex socio-ecological crisis configurations that will become increasingly common in the coming years and decades (unless we rapidly change course).

I will first give an overview of Deleuzian assemblage theory, focusing primarily on its reconstruction in the work of Manuel Delanda, and will then discuss how it can provide the ontological foundations for an alternative “crisis theory” for the 21<sup>st</sup> century.

### **Planetary Assemblage Theory**

Deleuzian assemblage theory maps emergent configurations combining human and non-human elements, which can include institutions, markets, infrastructures, technologies, flows of affect, resource flows, and ecological webs.<sup>56</sup> While the term “system” is often understood on a functionalist model in which the parts of a system are entirely subordinated to the whole (as in Hegelian conceptions of an “expressive totality”),<sup>57</sup> the concept of assemblage emphasizes looser configurations in which the parts are reciprocally co-constituting but retain their relative autonomy from the whole. Delanda frames this difference through the concept of “relations of interiority” vs. “relations of exteriority”: the parts of an assemblage retain relations of exteriority in the sense that the identity of the parts retain relative autonomy from the whole and can take on new properties through novel linkages with other components, whereas relations of

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<sup>56</sup> In contrast, the variant of assemblage thinking inspired by “Actor Network Theory” (ANT) focuses on empirically tracing local connections between hybrid agencies in diverse local contexts, rather than illuminating emergent structures and their “possibility spaces”. Whereas ANT could be considered a kind of empiricism, assemblage theory in its Deleuzian/Delandian variant is closer to “critical realism” in its emphasis on real but unobservable structures. On critical realism see Roy Bhaskar, *Enlightened Common Sense: The Philosophy of Critical Realism* (London: Routledge, 2016).

<sup>57</sup> See Jason Edwards, “The Materialism of Historical Materialism,” In Coole, Diana; Frost, Samantha (eds) *New Materialisms: Ontology, Agency, and Politics*. Duke University Press: Durham & London, pp. 281-298

interiority imply that the identity of the components is subordinate to the whole of which they are a part.<sup>58</sup> The concept of assemblage therefore provides a way of thinking about a range of formations that hold together through the reciprocal influence of their components, which can fall anywhere on a continuum between those with greater relations of interiority (or what Deleuze and Guattari would call “arboreal” assemblages), and those with greater relations of exteriority (or “rhizomatic” assemblages).<sup>59</sup>

Whether they fall more on the arboreal or rhizomatic side of the continuum, assemblages can be understood (like systems) as emergent wholes at different scales with their own tendencies, behaviors, and capacities to affect and be affected by other processes and assemblages,<sup>60</sup> and the relations between assemblages can in turn create higher-order assemblages with their own emergent properties and capacities. Delanda’s multi-scalar approach to assemblage theory thus resonates with the concept of “panarchy” from ecology, which understands ecosystems in terms of a nested multi-scalar structure of ecological processes, with processes at higher-levels (e.g. the global climate system) emerging from and simultaneously constraining (typically faster) processes at smaller scales (e.g. regional biomes, local ecosystems, and micro-niches).<sup>61</sup> In this sense, we can map multiple scales of an over-arching “planetary assemblage,” which can be considered a panarchy of nested socio-ecological assemblages, from individual bodies to cities and suburban and rural communities, nation-states, regions, the capitalist “world-assemblage,” and the global climate and earth assemblages as a whole.<sup>62</sup>

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<sup>58</sup> Delanda, *A New Philosophy of Society*, 10-11.

<sup>59</sup> Delanda, *Assemblage Theory*, 3; see also Deleuze and Guattari, *A Thousand Plateaus*, 7-8.

<sup>60</sup> Delanda, *A New Philosophy of Society*, 18.

<sup>61</sup> C.S. Holling & Lance Gunderson (eds.), *Panarchy: Understanding Transformations in Human and Natural Systems* (Washington: London Press, 2002).

<sup>62</sup> For a useful description of this form of multi-scalar mapping see Alex Williams, *Political Hegemony and Social Complexity: Mechanisms of Power After Gramsci* (Cham: Palgrave MacMillan, 2020), 151.

Rather than sharply delimiting between assemblages at different scales or positing a one-way causal hierarchy, this approach follows David Byrne and Gill Callaghan's emphasis on "nested but interpenetrating systems with causal powers running in all directions."<sup>63</sup> Planetary Assemblage Theory in this way weaves a course between the two ecological Marxist strands by emphasizing both the relatively autonomous dynamics of differently scaled emergent assemblages (especially the capitalist world and earth assemblages) as well as the *socio-ecological* character of these differently scaled assemblages (rather than conceiving capitalism and the earth as distinct "social" and "natural" levels).

While Delanda rejects Marxism and its variants for positing capitalism as a totality, their approaches can be made compatible if we think of capitalism as an emergent global assemblage defined by a (geographically uneven) mixture between relations of exteriority and interiority; in other words, an emergent formation that shapes, constrains, and integrates all socio-ecological assemblages to differing degrees without depriving them of their relative autonomy. In this sense, while Planetary Assemblage Theory breaks from Marxism in conceiving global capitalism as more of a rhizomatic assemblage defined by relations of exteriority rather than an organic totality, it agrees with Marxists that capitalism forms the most powerful or "ecologically dominant" assemblage in the world system. As Bob Jessop explains, this refers to "the capacity of one system in a self-organizing ecology of self-organizing systems to cause more problems for other systems than they can cause for it", or to have more power to shape other systems (e.g. states, international institutions, education, culture) more than they are capable of influencing the former in turn.<sup>64</sup> In this sense, contra Delanda, we need not

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<sup>63</sup> David Byrne and Gill Callaghan, *Complexity Theory and the Social Sciences* (Abingdon: Routledge, 2013), 45.

<sup>64</sup> Bob Jessop, *State Power* (Cambridge: Polity Press, 2008), 31.

“assume that capitalism accounts for every stitch in the social fabric”<sup>65</sup> for us to recognize its powerful emergent global effects. A similar point can be made regarding the earth system or “Gaia”, which would be more productively understood as a rhizomatic assemblage as opposed to a homeostatic system.

While the foregoing presents what could be called an “extensive mapping” of actualized socio-ecological assemblages at multiple scales, assemblage thinking also requires an “intensive mapping” of the differential relations and tensions that lend assemblages their (loose and malleable) structure and impel them to continuously shift and sometimes abruptly transform their structures and feedbacks.<sup>66</sup> Delanda, following Deleuze, claims that assemblages emerge from an underlying matrix of intensive differences, or “virtual multiplicities,” which Deleuze defines as “complexes of relations and corresponding singularities”, or compositions of “differential relations between genetic elements” that structure the possibility space for a given assemblage.<sup>67</sup> The underlying multiplicities that structure actual assemblages are “virtual” in the sense of being “real without being actual, ideal without being abstract.”<sup>68</sup> The important thing for our purposes is that the virtual constitutes a dimension of the real that is not *empirical* in the sense of referring to actualized and perceivable entities, but is rather the real “generative ground” from which actual assemblages emerge and which continuously “guides” and constrains their trajectories.<sup>69</sup> Those like Delanda and Protevi who highlight the intersections between complexity theory and Deleuzian ontology claim that virtual

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<sup>65</sup> Delanda, *Assemblage Theory*, 41.

<sup>66</sup> Ibid: 116.

<sup>67</sup> Gilles Deleuze, *Difference and Repetition*, Trans. Martin Joughin (London: Continuum, 2004), 203, 229-230; see also Delanda, *Assemblage Theory*, 122.

<sup>68</sup> Deleuze, *Difference and Repetition*, 260.

<sup>69</sup> Protevi, *Life, War, Earth*, 10.

multiplicities correspond to the concept of “possibility spaces.” As Delanda explains, these can be modeled as a landscape of “attractors,” or “zones of stability” that maintain an assemblage within a specific bandwidth of behaviors and tendencies, and “bifurcations” (or singularities), which refer to abrupt transitions that can rapidly transform the structure and behavior of an assemblage by creating a new set of feedbacks.<sup>70</sup> Following John Protevi and Mark Bonta, bifurcation events can also be called “far-from-equilibrium ‘crisis’ situations”<sup>71</sup> in which the habitual patterns and tendencies of an assemblage are thrown into disarray, creating a condition “in which minimal fluctuations...can now push the system to a new pattern.”<sup>72</sup> It is in moments of crises such as these that the virtual is revealed, since actualized assemblages normally “hide” the potentialities of alternative attractors, powers, and tendencies harbored within them, which can be brought to the foreground through disruptive encounters, novel feedbacks, or other contingent events.<sup>73</sup>

With this brief and overly schematic sketch of Deleuzian assemblage theory, we can now return to the question of how it might help us to rethink Marxist crisis theory. The capitalist world-assemblage as a whole has a spatiotemporally uneven and networked structure that integrates and constrains a vast array of relatively autonomous socio-ecological assemblages across the planet to varying degrees, either harnessing them directly by consuming their “work-energy”<sup>74</sup> (e.g. in the case of raw materials, energy, food extraction and socio-technical labor-power – itself always hybrid) or relying on them as stable platforms for further accumulation (e.g. the climate system, sociotechnical

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<sup>70</sup> Delanda, *Assemblage Theory*: 120.

<sup>71</sup> Protevi and Bonta, *Deleuze and Geophilosophy*, 33.

<sup>72</sup> Protevi, *Life, War, Earth*, 6.

<sup>73</sup> Protevi and Bonta, *Deleuze and Geophilosophy*, 21-22.

<sup>74</sup> Moore, *Capitalism in the Web of Life*, 13.

infrastructures, supply chains, and microbial ecologies). Furthermore, the entwined dimensions of the global capitalist and earth assemblages all reciprocally shape each other through intricate relations and feedbacks, which is partially captured by the concept of the “food-water-energy nexus”<sup>75</sup> (though we could go further to describe a behemoth climate-food-water-energy-finance-information-public health-etc. nexus). As a result, crises in the circuit of capital accumulation can ripple outwards in processes of “synchronous failure”<sup>76</sup> with disruptive and potentially devastating though uneven consequences for these myriad assemblages. However, appreciating the relations of exteriority that define the earth and capitalist world assemblages means that we also need to understand the relatively autonomous dynamics of these sub-assemblages and understand how they intersect with and can precipitate accumulation crises in turn. In this sense, rather than focusing solely on crises arising from the “internal” contradictions of capitalism as a closed system, or thinking of capitalist crises in globally homogeneous terms (a tendency in World-Systems Theory, which can be a useful though misleading simplification),<sup>77</sup> we should develop an approach that is attuned to the spatiotemporally uneven, multi-assemblage, and multi-scalar structure of capitalist crises. Thomas Homer-Dixon and colleagues provide a useful description of how we might begin to conceptualize these dynamics:

In the real world, any such crisis will have an intricate causal, spatial, and temporal structure...rather than a single critical transition at the planetary scale, smaller crises originating within particular systems or geographical regions might propagate across system boundaries, connect together, and then expand into a global crisis.<sup>78</sup>

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<sup>75</sup> Paulo D’Odorico et al, “The Global Food-Energy-Water Nexus,” *Review of Geophysics* 56 (2018), 456-531.

<sup>76</sup> Homer-Dixon et al, “Synchronous Failure”

<sup>77</sup> E.g. Wallerstein, “Structural Crisis”; Arrighi, *Adam Smith in Beijing*.

<sup>78</sup> Homer-Dixon et al, “Synchronous Failure,” 1.

In other words, critical events or “shocks” may emerge in a particular region or sub-assembly (e.g. an extreme hurricane hitting an important economic node like the US northeast or gulf coast; a major drought and crop failure in one of the world-system’s key “breadbaskets”; or a tipping point in the Amazon rainforest) before propagating outwards and potentially triggering bifurcations in national, regional, or global-scale socio-ecological assemblages.

Furthermore, we can say that “actual” crises in this sense emerge from an underlying “planetary crisis multiplicity”, which refers to the composition of differential relations between the earth’s myriad socio-ecological assemblages, from the microbial to the planetary scale, and their mutually implicated tensions, stressors, and bifurcation points. From the perspective of Planetary Assemblage Theory, “crises” primarily refer to actual bifurcation events that push assemblages beyond their stability domains into a chaotic space between attractors, though they emerge from an underlying virtual multiplicity that forms the “genetic ground” of these actual crises. The concept of a planetary crisis multiplicity is related to the Marxist concept of a “structural crisis of capitalism,” which, as István Mészáros describes, “[unfolds] in historical time in an *epochal* and not episodic/instantaneous sense,” though it is punctuated by actual crisis events while occasionally giving the “false appearance of ‘normality’.”<sup>79</sup> However, the concept of a planetary crisis multiplicity emphasizes the multi-dimensional and socio-ecological character of this crisis rather than totalizing it under the sign of capital (though without ignoring the latter’s “ecologically dominant” role in generating these crises). There is a risk that this concept conflates virtual and actual levels of analysis, since in a

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<sup>79</sup> István Mészáros, *The Necessity of Social Control* (New York: Monthly Review Press, 2014), 221.

Deleuzian ontology it is not clear that we can speak of “crises” on the level of the virtual. But to speak of a planetary *crisis* multiplicity (rather than simply a planetary multiplicity) highlights an intensive shift occurring in the planetary assemblage as a whole, akin to an accumulation of tension rife with catastrophic/creative potential, that manifests through an increasing frequency and intensity of actual crises.<sup>80</sup> Another way to put it, as Andreas Malm writes, is that we’re facing a “loaded dice, manifesting as discrete events.”<sup>81</sup>

The planetary crisis multiplicity is in this sense an “N-dimensional”<sup>82</sup> structure (i.e. involving a potentially infinite number of dimensions) composed of the reciprocally determining relations and tensions between socio-ecological assemblages across the planet, which includes relations between political-economic and geopolitical tensions, climate change, food and energy system vulnerabilities, microbial evolution, biodiversity collapse, cognitive-affective tensions (e.g. those signified by anxiety, incipient “molecular fascisms,”<sup>83</sup> militant nationalisms, religious and other fundamentalisms) and various other “intensive” processes that reinforce systemic fragility and may either catalyze or amplify bifurcation events at different scales. Such a structure is of course unknowable in its full complexity, a shape-shifting virtual landscape that continuously evolves as these dynamic material processes unfold.<sup>84</sup> However, we can analyze the most important structures of political-economic power through which it is continuously

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<sup>80</sup> If the virtual is akin to a “dice throw” that reshuffles intensive relations and thresholds (See Deleuze, *Difference & Repetition*, 248), then it appears that something like an intensive shift is happening on the level of the virtual *in addition* to the actual (i.e. a process of “loading the dice”), though how we conceptualize this “something” is a challenge. It is perhaps more fitting to speak of the planetary crisis multiplicity on the level of the *intensive* rather than the virtual, or the preindividual field of intensive differences that mediates between the virtual and actual. See Protevi, *Life, War, Earth*, 4-5.

<sup>81</sup> Malm, *Corona, Climate, Chronic Emergency*, 85.

<sup>82</sup> Protevi and Bonta, *Deleuze and Geophilosophy*, 39; Deleuze and Guattari, *A Thousand Plateaus*, 10.

<sup>83</sup> William Connolly, *Aspirational Fascism: The Struggle For Multifaceted Democracy under Trumpism* (Minneapolis: University of Minnesota Press, 2017).

<sup>84</sup> On the dynamic relation between the virtual and actual see Deleuze, *Difference and Repetition*, 264; Protevi, *Life, War, Earth*, 151.

produced, reproduced, and intensified (i.e. global capitalism, inter-state geopolitics, and their spatially uneven regimes of securitization that defend race-gender-class inequalities); identify key sources world-assemblage fragility (e.g. economic inequality and financial systemic risk, climate change and earth system tipping points, depleting high quality resources, habitat destruction and intensified contact between humans and zoonotic disease vectors, etc.); and imperfectly anticipate the various sorts of actual crises to which it gives rise and their spatiotemporal and multi-assemblage dynamics.

In this sense, against apolitical studies of “systemic risk” that view these risks as inevitable (if undesirable) products of “globalization” that need to be managed and lived with to the best of our ability,<sup>85</sup> Planetary Assemblage Theory follows Marxism in developing a critical materialist approach that aims to transform the capitalist world assemblage and the forms of violence (towards both humans and non-humans) that fuel and reproduce the underlying planetary crisis multiplicity. However, I argue that we should update our theoretical frameworks and concepts to more adequately capture the complex spatiotemporal and multi-assemblage dynamics that characterize 21<sup>st</sup> century crises, thereby enabling counter-hegemonic movements to more effectively anticipate, navigate, and respond to these crises by utilizing them to transform our socio-ecological assemblages towards more just, sustainable, and resilient post-capitalist configurations.

## **A Planetary Assemblage Mapping of the 2007-08 “Great Financial Crisis” and COVID-19 Crisis**

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<sup>85</sup> e.g. Ian Goldin and Mike Mariathan, *The Butterfly Defect: How Globalization Creates Systemic Risks, and What to do About it* (Princeton: Princeton University Press, 2014).

I will now demonstrate how Planetary Assemblage Theory can deepen our analysis of the two most significant global crisis cascades of the 21<sup>st</sup> century so far: the 2007-08 “Great Financial Crisis” and the ongoing COVID-19 crisis. While many Marxists have provided rich analyses of these crises, which sometimes overlap with the account provided here,<sup>86</sup> I claim that, at their best, their rich empirical analyses *exceed* the traditional Marxist categories often used to interpret them, whereas in other cases it limits their gaze to focus on certain processes and dynamics (particularly those deemed “internal” to the circuit of capital accumulation) while excluding others.

Beginning with the 2007-08 “Great Financial Crisis”, the name itself reflects the common view that it was primarily a crisis emerging from the global financial system that subsequently spread to infect the “real economy”.<sup>87</sup> Marxists and Keynesians are correct that the crisis was made possible by unprecedented inequality emerging from globalized labor arbitrage and the resulting stagnant wages and suppressed aggregate demand, which had to be compensated by innovative financial engineering to expand credit and debt.<sup>88</sup> The creativity and self-organizing dynamics of financial assemblages themselves (made possible by the spread of digital technology and platforms like fiber optic cables, server farms, algorithms, risk assessment models, etc.) can be productively analyzed through an assemblage lens, which are often missed by Marxist approaches that

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<sup>86</sup> Marxist analyses of the 2007-08 financial crisis have for the most part ignored its socio-ecological dimensions (e.g. Harvey, *Enigma of Capital*; Foster & McChesney, *The Endless Crisis*; Smith, *Imperialism in the Twenty First Century*; Wallerstein, “Structural Crisis”), though the nature COVID-19 crisis has pushed some of them to develop more hybrid socio-ecological analyses (e.g. Foster and Suwundi, “COVID-19 and Catastrophe Capitalism”; Wallace et al, “COVID-19 and Circuits of Capital”)

<sup>87</sup> Adam Tooze, *Crashed: How a Decade of Financial Crises Changed the World* (New York: Penguin, 2018); Harvey, *Enigma of Capital*; Foster & McChesney. *The Endless Crisis*.

<sup>88</sup> Harvey, *Enigma of Capital*; Foster & McChesney. *The Endless Crisis*; Paul Krugman, *End This Depression Now!* (New York: Norton & Company, 2012); Thomas Palley, *From Financial Crisis to Stagnation: The Destruction of Shared Prosperity and the Role of Economics* (Cambridge: Cambridge University Press, 2012).

emphasize the causal primacy of the “real economy.”<sup>89</sup> But a fuller reconstruction of the crisis would see it as a vastly distributed spatiotemporal event emerging from an intricate structure of feedbacks between political-economic, financial, energy, and food assemblages with irreversible cascading consequences for socio-ecological assemblages across the planet (including climate).

As Thomas Homer-Dixon and colleagues describe, the 2007-08 crisis should be considered an early expression of an emerging “causal architecture of global crisis” linking financial, food and energy assemblages: while financial deregulation, inter-bank lending and the proliferation of obscure financial instruments accumulated systemic risk in the financial system, a spike in energy prices between 2005 and 2008 driven by the geological depletion of “conventional” (or more easily accessible) oil reserves (combined with rising demand from East Asia), was a crucial factor in catalyzing the wave of mortgage defaults across the US, leading in turn to financial collapse and the subsequent recession.<sup>90</sup> In this sense, as Helen Thompson explains, the 2008 crisis was “much more than a crisis generated by western financial sectors. It was also a crisis arising from the resource basis of western economies.”<sup>91</sup> Meanwhile, rising energy prices contributed to food price rises across the globe due to reliance of industrial agriculture on petroleum-derived inputs, while chaos in the financial system triggered a wave of financial speculation on food and land (considered to be safe assets in a time of economic uncertainty), which further exacerbated food price swings.<sup>92</sup> The expansion of biofuel

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<sup>89</sup> e.g. Smith, 2015

<sup>90</sup> Homer-Dixon et al, “Synchronous Failure”.

<sup>91</sup> Helen Thompson, *Oil and the Western Economic Crisis* (Cham: Palgrave MacMillan, 2017), 9.

<sup>92</sup> Homer-Dixon et al, “Synchronous Failure”; GRAIN, “The New Farm Owners: Corporate Interests and the Control of Overseas Farmland.” In Fred Magdoff and Brian Tokar (eds) *Agriculture and Food in Crisis* (New York: Monthly Review Press, 2010),

production in the US also played a key role by diverting farmland from food production and tightening stocks of key food staples, which was itself driven by Bush administration anxieties about “peak oil” and dependence on Middle Eastern oil.<sup>93</sup> Massive protests erupted in many states across the global south, which were particularly vulnerable to food price hikes as a result of neoliberal policies that dismantled national food reserves and deepened their import-dependency (even among states that had formerly been self-sufficient).<sup>94</sup> The subsequent protests were a key contributing factor to the 2010-11 Arab Spring, with further repercussions for the Syrian civil war (itself the product of a complex intersection between neoliberal restructuring, oil market turbulence, drought, and food price spikes), the so-called “migration crisis” in Europe (more adequately termed a “racism crisis”), and the subsequent rightwing populist backlash.<sup>95</sup>

The socio-ecological consequences of this event remain with us and will reverberate indefinitely in at least three ways. First, the crisis put a freeze on climate ambition (seen in the dismal outcome of the 2008 Copenhagen conference) by fostering a “growth at all costs” mindset among G20 policymakers, resulting in an increase in the fossil fuel intensity of the global economy and spiking emissions (growing 5.9% in 2010 after a 1.4% decrease in 2009).<sup>96</sup> Second, as Jennifer Clapp and Ryan Isakson document, the wave of speculation on food and land led to a further concentration of land ownership, putting pressure on already precarious small and medium scale food producers by raising land prices and “locking in” a set of agro-industrial practices based

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<sup>93</sup> Philip McMichael, “A food regime analysis of the ‘world food crisis’”, *Agriculture and Human Values* 26 (2009), 284.

<sup>94</sup> *Ibid.*, 282.

<sup>95</sup> Homer-Dixon et al, “Synchronous Failure,” 10. On the connection to the Syrian Civil War and so-called “migration crisis” in Europe (which may be more accurately called a “racism crisis”), see Ahmed, *Collapsing States*, 50.

<sup>96</sup> Glen Peters et al, “Rapid growth in CO2 emissions after the 2008-2009 global financial crisis,” *Nature Climate Change* 2 (2011), 2-4.

on “a shrinking array of genetically modified seeds and associated agrochemicals, with deleterious effects on biodiversity and attendant knowledge and practices.”<sup>97</sup> Third, the emergence of “quantitative easing” and historically low interest rates (combined with high oil prices) were in large part what made possible the rapid growth of “hydraulic fracturing”-based shale oil and gas in the US, with immense implications for energy markets, geopolitics, climate change, and local socio-ecologies across the US and other countries where “fracking” has taken root.<sup>98</sup>

Overall, the 2007-08 crisis can be considered a massively distributed “far-from-equilibrium” bifurcation event, which cascaded across multiple socio-ecological assemblages and impacted different states and regions in spatiotemporally uneven ways. We can call it a “bifurcation” event in the sense that it temporarily upended the political-economic patterns, relations, flows, and ideological assumptions that lent coherence to the neoliberal era, thereby creating a window of opportunity for transformations across financial, energy, and food assemblages. A combination of coordinated bailouts, unprecedented central bank intervention in the financial system, the rapid increase of shale oil and gas production, and the rise of austerity succeeded in restoring a semblance of world-assemblage “equilibrium,” in the sense that the capitalist world-assemblage fell back into its neoliberal attractor and its corresponding relations of power, patterns of trade and capital flows, ideological assumptions, and daily rhythms (though some states, particularly Syria, Greece, and Ukraine, would be thrown into deeper and longer-term turbulence).<sup>99</sup> There is no definite answer to the question of whether the crisis really

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<sup>97</sup> Jennifer Clapp and Ryan Isakson, *Speculative Harvests: Financialization, Food & Agriculture* (Rugby: Practical Action, 2018), 18-19.

<sup>98</sup> Thompson, *Oil and the Western Economic Crisis*.

<sup>99</sup> Williams, *Political Hegemony*, 199-222; Philip Mirowski, *Never Let a Crisis Go To Waste: How Neoliberalism Survived the Crisis*;

“ended” – as Adam Tooze claims, the crisis didn’t really end but rather mutated and metastasized into a “comprehensive political and geopolitical crisis of the post-cold war order.”<sup>100</sup> We can say that certain key elements of world-assemblage turbulence resulting from the crisis returned to *relative* normalcy at least among powerful states (e.g. economic growth, food and energy prices, employment levels). But the crisis management strategies adopted to achieve this relative stability merely intensified, restored, or only weakly mitigated the multiple tensions and stressors that generated the crisis – not only by restoring financialized debt-driven accumulation and intensifying economic inequality, but also by reinforcing dependence on fossil fuels (particularly shale oil and gas), further centralizing control of the global food system, locking in polluting and biodiversity killing agro-industrial practices, and exacerbating climate change. Thus while the immediate crisis in certain respects came to an end, the dominant responses only intensified the planetary crisis multiplicity from which it emerged, thereby setting the stage for a more transformative bifurcation event down the road.

Indeed, we are now in the throes of another such crisis that again reveals the planetary crisis multiplicity in which we are enmeshed, in some ways repeating the dynamics of the 2007-08 crisis while also unleashing an unprecedentedly complex event with its own unique self-organizing dynamics. The COVID-19 crisis is the socio-ecological assemblage crisis *par excellence*, emerging from the microbial creativity made possible by the intersections between globalized finance, agro-industrial expansion, habitat destruction, and wildlife markets before setting off a still unfolding cascade of shocks across global public health, political-economic, financial, energy, food, and

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<sup>100</sup> Tooze, *Crashed*, 20.

supply-chain assemblages. As has been widely reported, the SARS-CoV-2 microbe likely jumped from a bat to a pangolin before infecting humans at a wildlife market in Wuhan, China. But as Rob Wallace and colleagues argue, focusing on the site of emergence “ignores the relations shared by global economic actors that shape epidemiologies.”<sup>101</sup> In particular, western capital flowing from Wall Street and London played a key role in funding agro-industrial expansion in China, where agribusinesses have moved in order to take advantage of cheap labor and land, thereby pushing disease-carrying animals into closer contact with humans. They write:

As industrial production encroaches on the last of the forest, wild food operations must cut farther in to raise their delicacies or raid the last stands. As a result, the most exotic of pathogens, in this case bat-hosted SARS-2, find their way onto a truck, whether in food animals or the labor tending them, shotgun from one end of a lengthening periurban circuit to the other before hitting the world stage.<sup>102</sup>

The intersection between the Chinese Lunar New Year holiday in late January (China’s “busiest travel season”, which saw up to 400 million people circulating around the country),<sup>103</sup> initial information suppression by the Chinese state, and the relentless circulation of people and commodities from Wuhan ensured the local outbreak would reach pandemic status. Global markets roiled when cases spiked in northern Italy and appeared uncontainable, with the S&P 500 index losing a third of its value between February 20<sup>th</sup> and March 23<sup>rd</sup>.<sup>104</sup> Informed by the experience of the 2007-08 crisis, the US Federal Reserve on March 15<sup>th</sup> began pumping vast amounts of liquidity into the

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<sup>101</sup> Wallace et al, “COVID-19 and the Circuits of Capital,” 5.

<sup>102</sup> Ibid.

<sup>103</sup> Mary Hui and Jane Li, “China’s coronavirus outbreak couldn’t have come at a worse time: Lunar New Year,” In *Quartz*, 22 January, 2020, available at <https://qz.com/1789125/wuhan-coronavirus-outbreak-comes-at-a-terrible-time-chinese-new-year/> [Accessed 15 July 2020].

<sup>104</sup> Gunther Capelle-Blancard and Adrien Desroziers, “The stock market and the economy: Insights from the COVID-19 crisis,” In *Vox EU*, 19 June, 2020, available at <https://voxeu.org/article/stock-market-and-economy-insights-covid-19-crisis> [Accessed 15 July 2020]

financial system and began buying corporate bonds for the first time since the early 1930s.<sup>105</sup> These maneuvers brought stock values back above their pre-crisis levels (somewhat absurdly), though hits to the “real economy” have been devastating, producing an estimated \$3.8 trillion losses in global consumption, 147 million job losses, and over \$2 trillion in lost income worldwide.<sup>106</sup> This is alongside 137 million infections and nearly 3 million confirmed deaths worldwide as of the present writing (the actual numbers are suspected to be far worse).<sup>107</sup> Global supply chains are in turbulence, with some calling this the “first global supply-chain crisis”: more than 90% of Fortune multinational corporations have suppliers that have been affected by the pandemic, tens of thousands of “force majeure” declarations have been made indicating that suppliers are unable to fulfill their contracts, and 81% of global manufacturing firms have experienced supply shortages.<sup>108</sup> Previously unknown vulnerabilities emerging from the dizzyingly complex material entanglements of our global economy have come to light, not only via globally distributed supply-chains for crucial medicines and medical protective equipment but also for seemingly trivial materials like carbon dioxide gas, which is an essential chemical for water treatment and can threaten water and food supplies if disrupted,<sup>109</sup> or condoms, shortages of which the UN warns can provoke “devastating”

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<sup>105</sup> Robert Brenner, “Escalating Plunder,” *New Left Review* 123 (2020): 5.

<sup>106</sup> Manfred Lenzen et al, “Global socio-economic losses and environmental gains from the Coronavirus pandemic,” *PLoS One* 15, no. 7 (2020): 1-13.

<sup>107</sup> Johns Hopkins University of Medicine, “COVID-19 Map”, 12 August, 2020, available at <https://coronavirus.jhu.edu/map.html> [Accessed 12 August 2020]

<sup>108</sup> Foster and Suwandi, “Covid-19 and Catastrophe Capitalism,” 8-10.

<sup>109</sup> Jason Wilson, “Coronavirus-driven CO2 shortage threatens US food and water supply, officials say,” *The Guardian* (2020) available at [https://www.theguardian.com/us-news/2020/apr/20/carbon-dioxide-shortage-us-food-water-coronavirus?mc\\_cid=eef0c3516a&mc\\_eid=0d70a348da](https://www.theguardian.com/us-news/2020/apr/20/carbon-dioxide-shortage-us-food-water-coronavirus?mc_cid=eef0c3516a&mc_eid=0d70a348da) [Accessed 21 April 2020].

consequences such as an increase in unwanted pregnancies, unsafe abortions, and sexually transmitted diseases.<sup>110</sup>

The ramifications of these disruptions are still unfolding, and the longer-term economic implications remain uncertain. On one hand, some believe the pandemic may “engender a financial meltdown in a world economy still characterized by stagnation, debt, and financialization.”<sup>111</sup> On the other, most mainstream economists, including the IMF, believe that the lingering damage to rich states will be minimal, though they acknowledge that the fallout will be much worse for debt-distressed economies across the global south who are unable to muster the same financial firepower to contain its impacts.<sup>112</sup> However, we cannot write off the possibility of an even worse crisis to come that engulfs the world economy. Gillian Tett emphasizes that “it remains impossible to calculate the scale of eventual credit losses from COVID-19,” and it is very possible that we will witness a wave of consumer, corporate, and possibly sovereign debt defaults in the coming years that may trigger a global financial crisis.<sup>113</sup> Central bank determination to do “whatever it takes” will likely stave off a spectacular 2007-08-style financial meltdown,<sup>114</sup> but these preventive efforts themselves could have turbulent consequences in the coming years, e.g. by eroding faith in US dollar hegemony, raising inequality to

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<sup>110</sup> Sam Reeves and Belyi Seow, “Virus may spark ‘devastating’ condom shortage,” *Medical X Press* (2020) available at <https://medicalxpress.com/news/2020-04-virus-devastating-global-condom-shortage.html> [Accessed 10 July 2020].

<sup>111</sup> Foster and Suwandi, “Covid-19 and Catastrophe Capitalism,” 11.

<sup>112</sup> Chris Giles, “Pandemic will leave little lingering damage for big economies, says IMF,” *Financial Times* (2021) available at <https://www.ft.com/content/b3d04ff2-89f9-457c-806a-8618c8516580?emailId=606c5449df66d40004c467c3&segmentId=3d08be62-315f-7330-5bbd-af33dc531acb> [Accessed 14 April 2021].

<sup>113</sup> Frank Partnoy, “Will the Banks Collapse?” *The Atlantic* (2020) available at [https://www.theatlantic.com/magazine/archive/2020/07/coronavirus-banks-collapse/612247/?mc\\_cid=aea3ef5231&mc\\_eid=0d70a348da](https://www.theatlantic.com/magazine/archive/2020/07/coronavirus-banks-collapse/612247/?mc_cid=aea3ef5231&mc_eid=0d70a348da) [Accessed 8 July 2020]; Foster & Suwandi, “Covid-19 and Catastrophe Capitalism”.

<sup>114</sup> Gillian Tett, “The next financial crisis may be coming soon,” *Financial Times* (2021) available at <https://www.ft.com/content/c95e5a72-8322-4cfc-b36a-69e8998aea01> [Accessed 7 January 2021]; see also Foster and Suwandi, “Covid-19 and Catastrophe Capitalism”

new heights, triggering a return to financial austerity, weakening state capacities or willingness to raise climate ambition, and/or further watering the seeds of molecular fascism.<sup>115</sup>

The COVID-19 crisis has also triggered intense reverberations throughout energy assemblages. Collapsing demand plunged oil prices to historic lows in April 2020, with the US benchmark crude temporarily reaching *negative* \$35, while falling electricity demand has simultaneously put coal and even natural gas producers in crisis.<sup>116</sup> As a result, it is becoming increasingly common to hear that we may have passed “peak oil” (i.e. that oil production and demand will never again exceed 2019 levels), possibly even “peak fossil fuels” (though this remains contingent on the speed of recovery and stimulus policies developed in the next couple of years).<sup>117</sup> This is primarily due to collapsing demand for oil and electricity, combined with record-cheap solar and wind and gathering momentum for a state-led “green recovery,” making fossil fuel investments ever more risky and renewables more attractive.<sup>118</sup> But understanding the unique material properties involved in oil wells is also an important contributing factor to the present turbulence in energy assemblages: while low prices are putting immense pressure on shale producers to shut down oil wells in order to reduce the flow of oil, this can permanently curtail the production of individual wells, which are “organic deposits” that require steady pressure

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<sup>115</sup> Edward Luce, “America’s dangerous reliance on the fed,” *Financial Times* (2021) available at <https://www.ft.com/content/bcb8d4d9-ca6d-45b7-aafe-9e9ecf672a5b?segmentId=4f5fd6c3-98db-21a8-d57c-0a3ff08b5c3b> [Accessed 6 January 2021]; John Bellamy Foster, Jamil Jonna, & Brett Clark, “The Contagion of Capital”, *Monthly Review* (2021) available at <https://monthlyreview.org/2021/01/01/the-contagion-of-capital/> [Accessed 14 April 2021].

<sup>116</sup> Jonathan Watts and Jillian Ambrose, “Coal industry will never recover after the coronavirus pandemic, say experts,” *The Guardian* (2020) available at [https://www.theguardian.com/environment/2020/may/17/coal-industry-will-never-recover-after-coronavirus-pandemic-say-experts?CMP=Share\\_AndroidApp\\_Slack&utm\\_campaign=Carbon%20Brief%20Daily%20Briefing&utm\\_medium=email&utm\\_source=Revue%20newsletter](https://www.theguardian.com/environment/2020/may/17/coal-industry-will-never-recover-after-coronavirus-pandemic-say-experts?CMP=Share_AndroidApp_Slack&utm_campaign=Carbon%20Brief%20Daily%20Briefing&utm_medium=email&utm_source=Revue%20newsletter) [Accessed 18 May 2020].

<sup>117</sup> Kingsmill Bond, Ed Vaughan, and Harry Benham, *Decline and Fall: The size and vulnerability of the fossil fuel system* (London: Carbon Tracker, 2020).

<sup>118</sup> Watt and Ambrose, “Coal Industry Will Never Recover”

in order to sustain the flow of oil.<sup>119</sup> Combined with slashed spending on oil field exploration and development, these factors may make it difficult to increase oil production as demand recovers, creating a risk of significant supply shortfalls in the coming years with further cascading consequences for globalized supply chains, transportation assemblages, agro-industrial food production, economic growth, and climate change.<sup>120</sup> If disruptive energy shortages are avoided through a further expansion of unconventional oil production (e.g. shale, offshore, or arctic oil), then this will of course result in further climactic turbulence; on the other hand, if they're avoided by a rapid shift to renewable energy sources, the "stranded assets" left by an accelerated decline of the fossil industry would have immense financial ramifications,<sup>121</sup> demonstrating that intersecting energy-financial-climate assemblages will confront turbulence in the coming years whichever path ultimately unfolds.

One could go on and on about the ramifications and reverberations of this event across planetary socio-ecological assemblages. Global and regional food supply chains have been disrupted, and the UN warns that a combination of restrictions on skilled migrant labor during peak harvest periods; disrupted global flows of critical farm inputs (e.g. fuel, fertilizers, seeds, chemicals, machinery); and COVID-19 outbreaks among farm, transport, and factory farm workers (not to mention ongoing chronic food insecurity intensified by unemployment, climate-driven drought intensification, and locust swarms across North Africa and the Middle East) threaten to unleash a major

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<sup>119</sup> Ben Chapman, "Could coronavirus be the beginning of the end for the oil industry?" *The Independent* (2020) available at [https://www.independent.co.uk/news/business/analysis-and-features/coronavirus-oil-gas-industry-climate-change-renewable-energy-a9453756.html?mc\\_cid=7cae294e87&mc\\_cid=0d70a348da](https://www.independent.co.uk/news/business/analysis-and-features/coronavirus-oil-gas-industry-climate-change-renewable-energy-a9453756.html?mc_cid=7cae294e87&mc_cid=0d70a348da) [Accessed 8 April 2020].

<sup>120</sup> Nafeez Ahmed, "Will Covid-19 end the age of Big Oil?" *Le Monde Diplomatique* (2020) available at <https://mondediplo.com/outsidein/covid-19-oil> [Accessed 26 April 2020].

<sup>121</sup> Bond et al, *Decline and Fall*.

global-scale food crisis.<sup>122</sup> Greenhouse gas emissions have plummeted by 4.6% - “larger than any drop in anthropogenic emissions in human history”<sup>123</sup> – and ratcheting calls for a “green recovery” give many hope that we’re at the start of a turning point towards accelerated climate change mitigation (unfortunately, a UNEP report reveals that only 18% of COVID-related stimulus funds have so far been spent on “green” industries and infrastructure, thereby risking further lock-in rather than transformation of fossil-fueled socio-ecological assemblages).<sup>124</sup> Deforestation also increased 77% in 2020 compared to the 2017-2019 average, resulting from a combination of dwindling environmental law enforcement, increases in illegal logging as an adaptive response to the economic crisis, and relaxed environmental regulations in states like Brazil and Indonesia as a means to stimulate economic growth, with further repercussions for climate change and zoonotic spillover risks.<sup>125</sup>

In whichever way the COVID-19 crisis continues to unfold from here, we can say that it is shaping up to create the most complex and potentially most significant crisis in the history of global capitalism. It should be clear that traditional Marxist categories are unable to capture the spatiotemporal, multi-assemblage, human/non-human agential dynamics of this crisis and how it will indefinitely reverberate across planetary socio-ecological assemblages. Furthermore, as previously noted, it is merely the latest actual expression of a planetary crisis multiplicity that will reveal new socio-ecological

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<sup>122</sup> United Nations, “Policy Brief: The Impact of COVID-19 on Food Security and Nutrition,” (17 April, 2020) available at <https://www.un.org/pga/74/2020/04/17/the-impact-of-covid-19-on-global-food-security-and-nutrition-preventing-a-health-crisis-from-becoming-a-food-crisis/> [Accessed 17 July 2020].

<sup>123</sup> Lenzen et al, “Global socioeconomic losses,” 5.

<sup>124</sup> Alister Doyle and Megan Darby, “Big nations aid fossil fuels more than clean energies amid pandemic, researchers find,” *Climate Home News* (2020) available at <https://www.climatechangenews.com/2020/07/03/big-nations-aid-fossil-fuels-clean-energies-amid-pandemic-researchers-find/> [Accessed 3 July 2020].

<sup>125</sup> Anna Gross et al, “Global deforestation accelerates during pandemic,” in *Financial Times*, 9 August, 2020, available at <https://www.ft.com/content/b72e3969-522c-4e83-b431-c0b498754b2d> [Accessed 14 April 2021].

connections, vulnerabilities, cascading crisis pathways, and world-assemblage potentialities in the coming years and decades. In particular, as the climate emergency and biodiversity crises intensify, they may further amplify the risk of zoonotic pandemics by shrinking and fragmenting habitats, favoring opportunistic species like bats and rodents that happen to be major disease reservoirs, altering migratory patterns that increase contacts with humans, and increasing physical stress on these species in ways that may intensify viral shedding.<sup>126</sup> In conjunction with climate-induced financial shocks, agricultural disruptions, and energy supply shortfalls, these future crises will profoundly test the resilience of states and the capitalist world-assemblage as a whole while creating opportunities for transformative political agency at multiple sites and scales. Updating our conceptual frameworks and theories of crisis is necessary to map this evolving crisis architecture and inform counter-hegemonic strategies for anticipating and responding to future crises, with the ultimate aim of building most just and sustainable post-capitalist worlds.

## Conclusion

This essay has suggested one possible pathway by which Marxism and assemblage theory might be productively brought together in order to develop a new “crisis theory” for the 21<sup>st</sup> century, one that can grasp the multi-dimensional socio-ecological dynamics of contemporary global crises. It demonstrates that we don’t merely confront *one* crisis (e.g. the structural crisis of global capitalism) nor *many* separately emerging and intersecting crises, but a *planetary crisis multiplicity* with myriad actual

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<sup>126</sup> United Nations Environmental Program (UNEP), *Preventing the Next Pandemic: Zoonotic diseases and how to break the chain of transmission* (Nairobi, 2020), 29-31; Malm, *Corona, Climate, Chronic Emergency*, 85-91.

expressions across our intricately entangled planetary socio-ecological assemblages, with the COVID-19 crisis being merely the latest. Ecological Marxists have gone furthest within the Marxist tradition towards a new ontology and crisis theory that can capture the socio-ecological dynamics of global crises in the Anthropocene/Capitalocene, though Deleuzian assemblage theory can bring further nuance to their ontological frameworks and empirical analyses by emphasizing the intricate entanglements across political-economic-financial-food-energy-microbial-biotic assemblages through which these crises materialize and unfold. While assemblage theory and other “new materialist” approaches can in this way make valuable contributions towards updating our theoretical frameworks to illuminate the (virtual and actual) socio-ecological structures that shape the planetary present, it is vital to do this through a productive engagement with (rather than rejection of) the Marxist tradition, which remains essential for understanding the structural causes and dynamics of capitalist crises.

A new form of crisis theory in this sense is necessary to understand how the COVID-19 crisis will continue to evolve, as well as how the longer-term convergence between the climate emergency, mass extinction, energy depletion, agricultural disruption, emerging diseases, and other intensive processes will unfold in the coming decades. As Maria Ivanova and colleagues warn, referring to the convergence between social and ecological systemic fragilities, “we are only beginning to piece together the ways these different systems interact, and other, unknown or unanticipated, interactions are also likely.”<sup>127</sup> An influential report by the Bank of International Settlements

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<sup>127</sup> Maria Ivanova et al, “Global Risks: A Survey of Scientists’ Perceptions,” In *Our Future on Earth* (Future Earth, 2020), 17.

similarly argues that new inter-disciplinary approaches are needed to think about crises and systemic risk in the era of climate change, which they describe as

a new type of systemic risk that involves interacting, nonlinear, fundamentally unpredictable, environmental, social, economic and geopolitical dynamics...With the complex chain reactions between degraded ecological conditions and unpredictable social, economic and political responses, with the risk of triggering tipping points, climate change represents a colossal and potentially irreversible risk of staggering complexity.<sup>128</sup>

Some theorists may claim that an assemblage theoretical analysis of these complex systemic risks in this way merely echoes and reproduces an emerging hegemonic discourse that frames the world as marked by unpredictable emerging risks across multiple socio-ecological systems and sub-systems, therefore requiring securitized responses and technocratic management.<sup>129</sup> However, this would ignore the need for counter-hegemonic mappings of these crises from below to challenge hegemonic framings and responses. The missed opportunities of the 2007-08 crisis and ongoing opportunities for progressive transformation presented by the COVID-19 pandemic squarely demonstrate that critique by itself is insufficient: as social and environmental justice activists recognize, alternative analyses of these converging crises and affirmative proposals that center demands for justice are needed to push assemblages towards alternative configurations during their “far-from-equilibrium” crisis conjunctures.<sup>130</sup> An alternative crisis theory that builds on while going beyond Marxism is therefore necessary to improve our capacities to anticipate future crises, understand how they may

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<sup>128</sup> Patrick Bolton et al, *The green swan: Central banking and financial stability in the age of climate change* (Basel: Bank of International Settlements, 2020): 6.

<sup>129</sup> Melinda Cooper and Jeremy Walker, “Genealogies of resilience: From systems ecology to the political economy of crisis adaptation,” *Security Dialogue* 42, no. 2 (2011): 143-160.

<sup>130</sup> For a useful overview of analyses and proposals coming from Indigenous, environmental justice, and food sovereignty movements see Max Ajl and James Wilt, “‘Either you are fighting to eliminate exploitation or you are not’: A leftist critique of the Green New Deal,” In *Canadian Dimension* (14 June, 2020), available at <https://canadiandimension.com/articles/view/either-you-are-fighting-to-eliminate-exploitation-or-not-a-leftist-critique-of-the-green-new-deal> [Accessed 15 July 2020].

unfold, and take advantage of the opportunities they provide to push far-from-equilibrium socio-ecological assemblages towards alternative attractors that may lay the foundations of more just, sustainable, and resilient post-capitalist worlds.