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Moore, Jason W.

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EMPIRE, CLASS AND THE ORIGINS OF PLANETARY CRISIS: THE TRANSITION DEBATE IN THE WEB OF LIFE

Jason W. Moore[a]
https://orcid.org/0000-0002-7237-9895
Email: jwmoore@binghamton.edu

[a] Binghamton University State University of New York, Sociology Faculty, Binghamton, NY, United States

DEBATE
Colapso ambiental e histórias do capitalismo

ABSTRACT

We are discovering in the era of climate crisis that the Transition Debate is a debate over the origins and crisis tendencies of capitalism in the web of life. The original Debate emerged in its contemporary form in the thick of the Cold War, assuming mature form during the world revolution of 1968. It was a historical-analytical debate over the historical geography of capitalist origins, and its two poles were 1492 and 1800. The divergence turned as much on differing conceptions of capitalism as it did on empirical-analytical substance: the terrain of "actually existing" world history. And it was a political debate over the priorities of socialist politics, especially the enduring tension between "socialism in one country" and proletarian internationalism that had riven the world left since 1914 and the historic betrayal of Europe's social democratic parties in support of War. In the 21st century, the language of the Debate has changed, but assumed an even greater prominence in the unfolding climate crisis, captured in the debate between the Anthropocene ("Age of Man") and the Capitalocene ("Age of Capital"). In what follows, I will focus on the historical-analytical challenge, mindful of its relation to the ongoing struggle for planetary justice – and against the Popular Anthropocene's imperial-technocratic ambitions. We may begin with an extraordinary misperception of the Transition Debate. It is not, in the main, a contention between "production" and "circulation." If anything, it is about how class politics and modern state formation – including modern empires – cohere relations of production, reproduction, and accumulation.

KEYWORDS

Transition Debate; Capitalocene; Anthropocene.

Leonardo Marques (2021) has made a signal contribution to the Transition Debate. If that phrase, *Transition Debate*, is unfamiliar, don't despair. It's not an academician's quibble. And we are discovering in the era of climate crisis, the Transition Debate is a debate over the origins and crisis tendencies of capitalism in the web of life. The original Debate emerged in its contemporary form in the thick of the Cold War, assuming mature form during the world revolution of 1968.[1] It was a historical-analytical debate over the historical geography of capitalist origins. Its two poles were 1492 and 1800. The divergence turned as much on differing conceptions of capitalism as it did on empirical-analytical substance: the terrain of "actually existing" world history. And it was a political debate over the priorities of socialist politics, especially the enduring tension between "socialism in one country" and proletarian internationalism that had riven the world left since 1914 and the historic betrayal of Europe's social democratic parties in support of War. Today, the language of the Debate has changed, but assumed an even greater prominence in the unfolding climate crisis, captured in the debate between the Anthropocene ("Age of Man") and the Capitalocene ("Age of Capital") (MOORE, 2016; 2000; 2003b).

ONCE MORE INTO THE BREACH: POWER, LIFE AND THE HISTORICAL GEOGRAPHIES OF TRANSITION

In what follows, I will focus on the historical-analytical challenge, mindful of its relation to the ongoing struggle for planetary justice — and *against* the Popular Anthropocene's imperial-technocratic ambitions. We may begin with an extraordinary misperception of the Transition Debate. It is *not*, in the main, a contention between "production" and "circulation." If anything, it is about how class politics and modern state formation — including modern empires — cohere relations of production, reproduction, and accumulation.

The production/circulation mischaracterization powerfully obscures the common — yet geographically distinctive — class struggle analytics of the Transition Debate's two greatest luminaries, Robert Brenner and Immanuel Wallerstein. What most clearly distinguished the two was not production, circulation, or the class struggle, but *geography* (MOORE, 2003a). Brenner's geographical premise was the national unit –a foundational unit of analysis rather than, for Wallerstein, a unit of observation, as Marques underscores. Wallerstein's geography was not, as often maintained, an *a priori* system but an *emergent* web of relations: between territorial power, class politics and the organization of surplus production. Largely unconsciously, Wallerstein understood this emergence — a key dialectical principle — in relation not only to human organization but to webs of life that included climate change, soil conditions, demography, and deforestation. At stake in the Brenner-Wallerstein exchange was nothing short of a reinvention of historical materialism in the web of life. The debate was over the geographical contours of class formation and class politics, capital accumulation, and imperialism in the web of life: a historical-geographical materialism. (Not for nothing,

[1] Its classic formulation is Rodney Hilton, *The Transition from Feudalism to Capitalism* (1976). In the 1970s, it was crystallized in the opposition between Robert Brenner (1976), and Immanuel Wallerstein (1974).

the first seminar series at the Fernand Braudel Center in 1977 precisely focused on the historical geography of the modern world-system (CASTRO, 1977).

The Transition Debate has often fled from the vexing problem of geography — it is either ignored or reduced it to abstract *geometries* of core and periphery. That contributed to the sorry state of affairs in global environmental historiography that Marques sketches — none of its leading figures take the world-ecological problem of capitalist transition seriously. (He is more generous to the field than I am!) Disciplinary geographers, for their part, have consistently refrained from reconstructing the Transition's historical geography — and therefore environmental history that includes class, capital, and empire — in world-historical perspective.

Marques' (2021) important essay contributes to a potential opening for such a world-historical synthesis, one pregnant with implications for socialist strategy. Understanding capitalism's historical geography *as* "global environmental history" creates intellectual space for a synthesis that incorporates the irreducibly geographical insights of world-historical method with an empirical-analytical angle of vision of the spatiality of power, profit and life (MOORE, 2015; 2017c). That world-historical method, it bears emphasizing, was never about "system" as conventionally understood — since systems dynamics embraces "basic unit" approach and studies the interaction effects between these basic units. Rather, for Wallerstein and Hopkins, the world-historical method offered a searing critique of — and alternative to — the basic unit approach of historical social science, starting with the so-called nation-states. Such national units were provisionally stabilized crystallizations of class politics as they cohered unevenly across the time-space of a "vast but weak" capitalism. So too, core and periphery. This is the argument of *The Modern World-System I*, dialectically fusing the question of class and state with the question of capital- and class-formation in the long sixteenth century. To make a long story short, everything the Wallerstein argued about the dangers of methodological nationalism applies to methodological naturalism, the epistemological and ontological claim that the building blocks of historical inquiry are Society and Nature, here deliberately capitalized (MOORE, 2018a).

Although Marques resists the formulation, his illuminating thesis demonstrates how the modern world-system does not *have* a "world ecology," alongside imperialism, commodification, and class formation. Rather the modern world-system *is* a capitalist world-ecology (with hyphen) through which the decisive vectors of world-historical social change form and re-form — to borrow a phrase from Terry Hopkins — on the knife edge of life-making (HOPKINS, 1982). In historical capitalism — indeed in the history of class society — the "time of nature" operates, in classically Braudelien fashion, as something more than the "time of the sages" (BRAUDEL, 2009, p. 198). Across the *longue durée* of class society, such temporalities are dialectically constituted as "layers within layers" of geohistorical time (WALLERSTEIN, 1974, p. 86). Following Marx's method of determinate abstraction, the general abstractions of, say, orbital variation, solar fluctuations, El Nino cycles and North Atlantic Oscillations, are progressively woven into the fabric of civilizational history in the Holocene. In this light, class society is not only a product of "natural forcing" — as successive ebbs and flows of class society in relation to climate history demonstrate (BROOKE, 2014). That's only one side of the dialectic. The other is that class societies actively produced webs of life, elevating CO2 levels and contributing to the stabilization of Holocene climate, beginning around 8,000 BCE (RUDDIMAN, 2005; CHILDE, 1951). As we know, that carbon/class dialectic would reach a tipping point after World War II, when the consolidation of

global monopoly capitalism allowed for unprecedented carbonization. In short: modes of production are not only *products* — but also *producers* — of webs of life, albeit never equally so (Dialectical-historical relations take as their premise diversity and asymmetry). It's only capitalism's epochal capacity to carbonize the atmosphere that obscures the world-ecological dynamic of class society in the Holocene.

Through a Braudelien re-reading of historical materialism, Wallerstein opened a *problematique* that Marques (2021) now revisits: the "time of capital" and the "time of nature." Wallerstein suggests a dialectic understood as a class struggle over the origins and development of the law of value in the web of life. Recasting the Transition Debate in this way allows us to grasp its intellectual contributions to revolutionary — and against counter-revolutionary — struggles. These were obviously fundamental to the global context of the Brenner-Wallerstein moment, the World Revolution of 1968. That dialogue — often limited by sectarianism and casual reading — was crucial to a longstanding revolutionary debate ably crystallized by Lenin's observations on the international context of the class struggle and capitalism's "weakest links" (LENIN, 1917).

Today, the Transition Debate has returned with a vengeance. It has done so under cover of prolific discussions of something called the Anthropocene — or "Age of Man." The Anthropocene is better called the *Popular Anthropocene*, so as not to confuse the world-historical discussion of human affairs with a distinctive dialogue over geological history and its "golden spikes." The Popular Anthropocene, as Marques suggests, marks a return to the bourgeois naturalism commonly associated with Thomas Malthus, its fetishization of "natural law," and its ontological assertion that an abstract Humanity is the "agent" of planetary change. Its animating historical assertion holds that the origins of planetary crisis are found in 1800, with the advent of the rotary steam engine. It is, in another words, a return to the Transition Debate — not of the 1970s or the 1950s — but of the *1860s*, when Marx confronted classical political economy's bourgeois naturalism, with its metaphysics of natural law and acquisitive human nature. To tweak an old joke about Marx, one can shut the front door on the Transition Debate, but it will always find a way in through the kitchen window. So it is with today's Popular Anthropocene and the Capitalocene alternative (MOORE, 2017a; 2017b; 2017c; 2018b).

Revisiting crucial nodes of commodification, capitalization, and webs of life, Marques demonstrates that the rise of capitalism must be grasped as a world-historical movement — one that joins dialectically the time of capital and the time of nature. This has been the greatest weakness of historical materialism's reckoning of the Transition Debate — starkly revealed in radicals' accommodation to the Popular Anthropocene's bourgeois naturalism (ANGUS, 2016). Marques moves in precisely the opposite direction. He illustrates the connective tissues between the commodity form, its real abstractions, and imperialism in the web of life. In so doing, he establishes key elements of a world-historical synthesis that grasps — as Marx did — labor, the labor process, and class relations as "specifically harnessed natural forces" that are at once products and producers of webs of life, and the specific historical natures they implicate (MARX, 1973, p. 612). In other words, Marques's call for a synthesis of the time of nature and the time of capital is not *additive*, but dialectically synthetic. The provisional autonomy of many webs of life — the "natural forcing" mechanisms of climate change for example — are, in such a framework, conceptualized not as "external forces" (in the

fashion of environmental determinisms) but in relation to concrete totalities of historical change, rich totalities of many determinations, as Marx would say (1973, p. 100). In this fashion one may begin to see climate history as more than a series of natural events and disasters, as a rich geophysical history built into the DNA of modes of production. Climate, in this reading, is not *everything*. But it's impossible to explain *anything* fundamental about class society and civilizational change without it.

Marques' (2021) essay builds on a rich series of world-historical investigations, and is offered as a contribution to a dialogue. This is a rare opportunity. I will do my best not to squander it. Too often –especially on the contentious intellectual and political terrain of the Transition Debate — scholars succumb to the temptations of academic point scoring. I will from the beginning stipulate my basic agreement with Marques' important project, I will highlight my interpretive differences as a means of advancing the conversation. I am more interested in following that project's crucial provocations and questions than in quibbling over its exact formulations. I will, then, offer *complementary* account that — I hope! — is also complimentary. It overlaps at crucial junctures with Marques' interpretation, and at the same time, fleshes out additional crucial elements of the rise of capitalism.

I do so from the standpoint of capitalism as a *world-ecology* of power, profit and life (PATEL; MOORE, 2017). For the present discussion, I draw three elements from Immanuel Wallerstein's historical geography of capitalism. One is the centrality of the "socio-physical conjuncture" in the transition from feudalism to capitalism. Wallerstein was the first to demonstrate that the crisis of feudalism unfolded at the conjuncture of "class war," the dawn of the Little Ice Age, the Black Death, and agro-ecological contradictions. Hence: *socio-physical conjuncture*. Second, the crisis of feudalism was characterized by a "generalized seignior-peasant class war" through which western and central European peasants and workers dealt a historic defeat to the ruling classes (WALLERSTEIN, 1974, p. 14-64; 1992). The "solution" to this historic defeat in the class struggle was found in the alliance between the new modern empires and their financiers. The invasion and commodification of the Americas was, consequently, *class war* by other means. Peasantries in the Americas could be dominated much more readily than in western Europe; where such peasantries could not be found, new proletarians — African slaves — could be imported. Finally, the imperialist construction of a capitalist world-economy was not primarily about the world market and core-periphery relations as conventionally understood. These were the *results* of imperialist class politics. Rather, the emergent commodity chains, commodity frontiers, and productive complexes — in silver mining and sugar planting above all — turned on a worldwide class struggle over shares of surplus value. As Wallerstein (1979, p. 293) often noted "core" and "periphery" were but abbreviations for the struggle over surplus value, which of course is a class struggle inflected by imperialist bourgeoisie's superior command over the forces of destruction (WALLERSTEIN, 1983b). Wallerstein's emergent thesis was, by the early 1980s, clear: the "worldwide class struggle" (1983a) over surplus value must be grasped "within the ecological whole that is the Earth" (1980, p. 159). This tantalizing (and incomplete) synthesis — pursued by the world-ecology conversation — is a fundamental intellectual and political task in the era of planetary crisis, marked definitively by the end of the Holocene.

HISTORICAL MATERIALISM IN THE WEB OF LIFE: MARX, WALLERSTEIN AND THE GREAT FRONTIER

My original point of departure, a quarter-century ago, was the commodity *frontier* (MOORE, 2000b; 2001; 2000a). Here Marques and I emphatically agree: capitalism does not take shape within a reified Europe and then expand across the Americas. Rather, capitalism takes shape in the newly created geographical arena of the Atlantic world. Commodity chains and commodity frontiers — extending from Brazil to the Baltic and everywhere inbetween — are pivotal to the production of the capitalist Atlantic.

The commodity frontier is not a resource frontier as broadly understood in precapitalist civilizations. Nor should it be understood principally as an economic formation — although it does in fact include a pivotal economic moment. Paradoxically, capitalism's commodity frontiers were relatively more *politically* determined than precapitalist settlement and resource frontiers. In brief, the *commodity* moment of the commodity frontier is the result of a geocultural and geopolitical process that created the conditions of a good business environment. The production and capitalization of these conditions of profitable accumulation lead, inexorably if dialectically, to socio-ecological exhaustion (MOORE, 2015).

This entangled geopolitical and geocultural process turns fundamentally on the imperial creation of Cheap Nature and its Four Cheaps: labor, food, energy, and raw materials. These Cheap Natures are not produced as commodities but *appropriated* to advance the rate of profit and attenuate the tendency towards overaccumulation (WALKER; MOORE, 2019). Commodity frontiers are fundamental to *accumulation by appropriation*: the extra-economic mobilization of uncapitalized webs of life, putting these to work for capital. As such, commodity frontiers are as much about the appropriation of unpaid work as they are about commodification.[2] Indeed, the two form a world-historical unity: for every quantum of socially necessary labor time within the cash nexus, there must be a disproportionately greater volume of socially necessary *unpaid work*, performed by "women, nature, and colonies" (MIES, 1986, p. 77).[3] As imperialist bourgeoisies spearheaded proletarianization through the cash nexus, they also created the conditions for a feminized and "ecological" regime of unpaid work: creating in the long seventeenth century a *Femitariat* (unpaid human reproductive work) and a *Biotariat* (unpaid and alienated webs of life put to work for capital).[4] In this framing, the Proletariat conventionally understood depended on the expanded reproduction of politically- and culturally-enforced modes of domination, necessary to secure expanded supplies of unpaid work necessary for endless accumulation.

Commodity frontier and commodity chain analyses face the challenge of any dialectical-historical method: How does one study a "part" of a "whole" in which the

[2] This is an important difference between my approach and, among others, William Cronon's, *Nature's Metropolis* (1991).

[3] The disproportionality thesis between capitalized (paid) and appropriated (unpaid) work is developed in *Web of life* (MOORE, 2015).

[4] For the creation of the Femitariat (without the concept) see Silvia Federici's pathbreaking work, *Caliban and the Witch* (2004). The metaphor of Biotariat was coined by the poet and scholar Stephen Collis (2016). The Biotariat includes all the things we think of when we hear "ecosystem services" but also includes many humans, who are devalued on the grounds of the ruling abstraction Nature: above all through race, nationality, gender, sexuality, and so forth.

parts necessarily express crucial relations of the whole in question? As Wallerstein reminds us, totalities are not "just there," they are dialectical procedures that, in Marxism, express ongoing contradictions within the world proletariat and the worldwide balance of class forces. If the whole is more than the sum of its parts, such wholes are, he writes in the opening pages of *The Modern World-System*, also surely less. How does one navigate towards a dialectical synthesis that eschews regional particularism and systemic determinism?

Alas, there's no magic key or sacred analytical object that will solve our thorny intellectual — but of course also *political* — question. I would begin with the *historical* in *historical materialism*. How does one put together capital, class, and webs of life in the history of capitalism? My journey has been powerfully shaped by Marx and Engels' first major outline of historical materialism in *The German Ideology*. Appealing to Marx on historical questions of course solves nothing. Given the Debate's flight from historical geography, however, it may be fruitful to revisit Marx and Engels' extraordinary weaving of physical geography, environment-making, and class formation. Moving, as ever, from general to determinate abstractions, the

> first fact to be established [in a historical-materialist inquiry] is the physical organisation of these individuals and their consequent relation to the rest of nature. Of course, we cannot here go either into the actual physical nature of man, or into the natural conditions in which man finds himself—geological, oro-hydrographical, climatic and so on. *All historical writing must set out from these natural bases and their modification* in the course of history through the action of men (MARX; ENGELS, p. 31, emphasis added).

Marx and Engels were not recommending that one offer a few introductory remarks on the "environmental context" — as if environments and environment-making were epiphenomenal to class formation, modes of production, and town-country divisions of labor. Rather, each of these latter, more determinate, abstractions embodies and remakes "their consequent relation to *the rest of nature*" (MURRAY, 1988; MOORE, 2015; 2017c). It's through the Great Frontier that proto-capitalist agencies — every tributary civilization contained its share of these — confronted a mosaic of "natural conditions" and enacted a series of "modifications." Such "natural conditions" were, certainly from fourth millennium BCE, fundamentally structured by the warming effects of class-driven carbonization (RUDDIMAN, 2005). After 1492, the Great Frontier asks how this socio-ecological totality favored a capitalist rather than tributary resolution to the feudal crisis.

Few opened the question of modes of production as socio-ecological totality more effectively than Wallerstein. An instructive moment is the interpretation of feudal agriculture's fertility problem. Against the neo-Malthusian orthodoxy, Wallerstein offered a class critique of soil exhaustion. Drawing on the great Marxist medievalist, Rodney Hilton, he situates the "general crisis" — an epochal crisis of feudalism — within a millennium of class struggle and its socio-ecological contradictions:

> After a thousand years of surplus appropriation under the feudal mode, a point of diminishing returns had been reached. While productivity remained stable (or even possibly declined as a

> result of soil exhaustion) *because of the absence of structured motivation for technological advance*, the burden to be borne by the producers of the surplus had been constantly expanding because of the growing size and level of expenditure of the ruling classes. There was no more to be squeezed out […] [By the fourteenth century,] peasant insurrections… took the form of a "revolt against the social system as such." For Hilton, feudal "society was paralyzed by the growing expense of a social and political superstructure, an expense to which corresponded no compensating increase in the productive resources of society" […] [T]he immediate cause of the [crisis] […] was to be found in technological limitations, the lack of fertilizer and the inability to expand fertilizer supply by expanding the number of cattle, because the climate limited the quantity of winter forage for cattle. *But* "*what we should underline is that there was no large reinvestment of profits in agriculture such that would significantly increase productivity*." This was because of the inherent limitations of the reward system of feudal social organization (WALLERSTEIN, 1974, p. 37, 23 apud HILTON, 1951, p. 25, 27, 28, emphases added).

Feudalism's metabolic contradictions were products of the feudal class structure. Today, we know that class structure to have emerged in and through the favorable weather of the Medieval Climate Anomaly. Once the climate changed, definitively by the end of the thirteenth century, feudal agriculture stagnated. This was rooted in, as Wallerstein observes, a class contradiction that was also a metabolic antagonism: between the ruling strata's demand for the surplus and the peasantry's inability *and* unwillingness to deliver a rising surplus. This relation between class power, the feudal surplus, and metabolisms of life-making is fundamental.

I would risk pedantry if this essential point of agreement between Wallerstein and Brenner had not been so thoroughly buried by the "orthodox" Marxist interpretation. Wallerstein and Brenner were in essential agreement on a class struggle analytic that takes seriously metabolic and demographic contradictions. The very terms of the Marxist critique of neo-Malthusian historiography led them to deny the autonomy of demographic and soil exhaustion dynamics, instead locating these within feudal class structure. As Wallerstein makes clear, the relationship between demographic contraction after 1347 and feudalism's crisis flowed through endemic peasant and worker revolt against seigneurial hegemony, itself weakened by the contradictions of feudal agriculture and climate change we've just sketched. What Wallerstein and Brenner glimpsed — influenced as we've seen by Hilton — was how Marx's "social metabolism" was itself producer and product of the class struggle. What's tragic is how quickly the metabolic class struggle — the class politics of the "time of capital" and "the time of nature" dialectically joined — was swept under the rug.

Wallerstein was prepared to go further than Brenner on one count, however: the onset of the Little Ice Age as an exacerbating moment to feudalism's "cumulative woes" (WALLERSTEIN, 1974, p. 34). As then suspected and now understood definitively, the arrival of the Little Ice Age significantly suppressed agricultural productivity across feudal Europe. Wallerstein's insight was to join — under the rubric of the socio-physical conjuncture — agro-ecological stagnation, dietary immiseration, the crisis of seigneurial

revenues, and “generalized seignior-peasant class war” in the long fourteenth century with climate change (WALLERSTEIN, 1974, p. 24). Wallerstein observes that

> obviously, to the extent that there was climatic change, it would affect the operations of a social system. Yet equally obviously, it would affect different systems differently. Though opinions differ, it is probable that such glaciation as did occur was spread over the whole Northern Hemisphere, yet social developments in Asia and North America were clearly divergent from those in Europe. It would be useful therefore to return to the chronic factor of resource strain involved in the feudal system of social organization, or overconsumption by a minority given the overall low level of productivity […] If however there was first economic regression because of the chronic overexploitation and resulting rebellions discussed previously, and then climatic factors added on both food shortages and plagues, it is easy to see how the socio-physical conjuncture could achieve ‘crisis’ proportions (WALLERSTEIN, 1974, p. 35).

Nor did Wallerstein stop there. If the feudal crisis was a “socio-physical conjuncture,” so was the formation of a capitalist world-economy across the “long” sixteenth century (c. 1450-1648). Wallerstein’s geographical argument is frequently misunderstood, so it bears repeating in two steps that should be grasped as a whole. In the first instance, the climate-class crisis of feudalism was a moment of historic defeat for western Europe’s ruling strata (WALLERSTEIN, 1992). This defeat underpinned the era’s ruinous warfare, as ruling strata sought to recoup in war what they had lost in the class struggle. “The only solution that would extract western Europe from decimation and stagnation,” Wallerstein writes, was “one that would expand the economic pie to be shared, a solution which required, given the technology of the time, an expansion of the land area and population base to exploit. This is what in fact took place in the fifteenth and sixteenth centuries” (WALLERSTEIN, 1974, p. 24).

This observation was only the first moment of explanation. The second turned on the imperial refashioning of “world ecology” (WALLERSTEIN, 1974, p. 44). The “expansion of the economic pie” and “the expansion of the land area and population base to exploit” was for a Wallerstein a question of environmental history: *"World ecology was altered* and in a way which, because of the social organization of the emergent European world-economy, would primarily benefit Europe.” Building on Marx and Braudel, Wallerstein saw this epochal refashioning of world ecology as ongoing, the biogeographical accompaniment to capitalism’s expansionism, itself a search for “low-cost labour forces" (WALLERSTEIN, 1983b, p. 39).

That nexus of world ecology and world class formation under conditions of imperial rule would decisively inform my formulation of capitalism *as* a world-ecology in the early 2000s. Wallerstein’s interpretation was precocious and prefigurative, taking seriously capitalism’s tendency to degrade the worker and the soil, and therefore to exhaust its socio-ecological conditions of reproduction. Highlighting sugar — early capitalism’s defining mass commodity — we learn that sugar was “very lucrative” but also devastated soils and labor-power (slaves): “Exhausting the soil, … it required ever new lands (not to speak of the manpower exhausted by its cultivation).” Propelling capitalism’s geographical expansion was the recurrent need to compensate for the

devastation of soils, the destruction of forests, and the exhaustion of labor-power. Wallerstein followed Marx's insights on the capitalist degradation of the "soil" and the "worker" (MARX, 1977, p. 636-638).

He did so, moreover, by locating that degradation within capitalism's *world ecology* and through the ongoing search for a "tractable labor force" (WALLERSTEIN, 1974, p. 51). Significantly, this interpretation situates capitalism's cheap labor strategy with and within biophysical and class struggle moments of the American genocides:

> Why Africans as the new slaves? Because of exhaustion of the supply of laborers indigenous to the region of the plantations, because Europe needed a source of labor from a reasonably well-populated region that was accessible and relatively near the region of usage. But it had to be from a region that was outside its world-economy so that Europe could feel unconcerned about the economic consequences for the breeding region of wide-scale removal of manpower as slaves. Western Africa filled the bill best […] The exhaustion of alternative supplies of labor is clear. The *monocultures imposed on the Mediterranean and Atlantic islands ravaged them, pedologically and in terms of human population*. Their soils were despoiled, their populations died out (for example, the Guanches of the Canary Islands), or emigrated, to escape the pressure. Indian populations on Caribbean islands disappeared entirely. New Spain (Mexico) had a dramatic fall in population from approximately 11 million in 1519 to about 1.5 million in circa 1650. Brazil and Peru seem to have had an equally dramatic decline. The two immediate explanations of this demographic decline seem to be disease *and damage to Indian cultivation caused by the domestic animals that the Europeans bred*. *But sheer exhaustion of manpower, especially in the mines, must also have been significant*. Consequently, at a relatively early point, the Spaniards and Portuguese ceased trying to recruit Indians as slave labor in the Western Hemisphere and began to rely exclusively on imported Africans for plantation slaves. Presumably, the cost of transport still did not bring the cost to a higher point than the potential cost of preventing runaways by the remaining indigenous population. Besides the latter were rapidly dying off (WALLERSTEIN, 1974, p. 89-90, emphases added).

Wallerstein and Marx, then, provide crucial insights through which Marques and I are grappling with the transition from feudalism to capitalism in the web of life. For what are the American nodes of global commodity chains — and the sugar, silver, and other major commodity *frontiers* — but combined and uneven configurations of power, profit, and life? The labor question is, as Wallerstein makes clear in the foregoing passage, a question of capitalist *nature* — it is a *class relation* of labor-in-nature and nature-in-labor, cohered through geopolitical power and geocultural domination. From this perspective, we can begin to address the Transition Debate in the web of life.

THE GREAT FRONTIER: CHEAP NATURE IN THE RISE OF THE CAPITALOCENE

What drove the Great Frontier? Recall that the dawn of the Little Ice Age (c. 1300-1850) detonated feudalism's manifold socio-ecological crisis — leading directly to the breakdown of feudal agriculture in the Great Famine (1315-22) and associated epizootic outbreaks, amplifying simmering class contradictions. The following century was defined by a "generalized seignior-peasant class war" whose contours were shaped by Little Ice Age climate and the resurgence of catastrophic disease (WALLERSTEIN, 1974, p. 24). To be clear, the crisis was not a Malthusian but a Marxist dynamic. Questions of soil fertility had to be situated within feudalism's class relations (PATEL; MOORE, 2017). To summarize: the seigneurs lost the class struggle — though not for want of trying. The feudal surplus dramatically contracted in the throes of the climate-class conjuncture. Feudal Europe de-commercialized. The balance of class power on the Continent swung in favor of the peasantry.

Enter the Great Frontier as a mode of waging the class struggle by other means. Here was a mode of conquest that was an ongoing synthesis. It combined premodern strategies of Holy War and armed trade with a novel emphasis: Cheap Labor at any cost. Labor, not land, productivity was — after 1492, but especially after 1550 — what mattered. New working classes had to be created and secured if a new basis of enrichment was to be established. Having lost the class struggle in the European heartland, the Continent's beleaguered tributary ruling strata — including merchant-bankers in places like Genoa and Flanders — looked to the frontier. But frontiers were worthless without the labor to work them, and modern proletarianization required entirely novel forms of territorial power. After 1492, in the world-historical blink of the eye, the *encomienda*, a land-grant used widely in the *Reconquista*, was reinvented as a labor-grant in the Americas. Fierce theological and even political debates ensued, but the die had been cast (PATEL; MOORE, 2017).

The Great Frontier as a frontier of Cheap Labor was pivotal to early capitalism's greatest innovations. The Transition's defining moments clustered on the Great Frontier — new productive organizations, credit systems, imperial structures, coercive proletarianization, and the shipping-shipbuilding-cartography technological complex. These allowed imperial, financial, seigneurial, and other elite actors to overcome their historic class defeat. The new frontiers were not a demographic outlet for a reified Europe full of reified Whiteness — but rather a set of politically-secured opportunities for profit and capital accumulation (These opportunities were the very mechanisms of producing these fetishes; let us avoid putting carts before horses!). Older demographic, commercial, and resource frontiers were — along with everything else — turned inside out after 1450. The new commodity frontiers — spearheaded by debt-financed empires — forged not only strategies for expanding "the economic pie" but transforming the character of surplus accumulation itself (MOORE, 2017d; 2018b).

Beginning tentatively in the 1470s — in heretofore obscure regions like the Erzgebirge and Madeira — the medieval logic of boom and bust was thoroughly transformed (MOORE, 2007; 2010c; 2011). Their profits enriched not merely local potentates but the financiers who made the new productive organizations possible. The new productive revolutions set in motion environmental change and proletarianization at breathtaking speed, one whose class contradictions burst into open insurrection in

1525. The Fuggers and Welsers financed Central Europe's mining boom; Flemish and Genoese merchants financed Madeira's sugar revolution. It was these bourgeois who profited — and in the case of the Fuggers, perished — on the strength of investment in "real capital." And it was these accumulated profits that financed commodity frontiers across the capitalist Atlantic.

These contradictions reached critical mass by mid-century. Their precondition was the Columbian Invasion launched in 1492. These invasions were marked by the globalization of the "military revolution" and wherever possible the outright plunder of gold and silver. It was not a directly productivist enterprise — nor did it need to be. In the decade after 1549, however, signs of crisis were everywhere. A productivist turn was clearly necessary — and immediately recognized in the Courts of Europe. The Portuguese assumed direct administration of Brazil (1549). The Spanish debated the fate of indigenous peoples at Valladolid (1550-51). Spain's Philip II declared bankruptcy and the French king (Henry II) saw his finances "collapse" in 1557, precipitating modernity's first great financial crisis (SPOONER, 1972; MOORE, 2010a). Their fiscal houses burning to the ground, the two great rivals struck a peace at Cateau-Cambrésis in 1559, codifying what the obvious: no great power would resolve the feudal crisis through Charlemagne-like conquests and a new imperium. "Europe" would not become a world-empire (WALLERSTEIN, 1974). The extraordinary price inflation — the Price Revolution — had cheapened credit and rendered it indispensable to cash-crop agriculture across Europe, quickly reaching places like Brazil and Barbados in the century after 1549 (TAWNEY, 1941; SCHWARTZ, 1985; BRAUDEL; SPOONER, 1967). All of which favored a trans-Atlantic productivist turn after 1549, morphing imperial claims into *commodity* frontiers — no less imperialist for the metamorphosis.

Finally, signs of a climate downturn were evident by the 1550s. Climatic conditions deteriorated rapidly after 1600. For the most part the outcome of natural forcing, the socio-physical conjuncture was amplified by slaving-induced genocides in the New World. The destruction of New World peoples and civilizations led to a dramatic drawdown of atmospheric carbon dioxide — the Orbis Spike (1610) — which in turn aggravated Europe's climate downturn (LEWIS; MASLIN, 2015). This was the geophysical moment inscribed in the origins of the climate class divide, climate apartheid, and climate patriarchy: the capitalogenic trinity that now drives us full throttle towards the planetary inferno (MOORE, 2019a; 2019b). The result was a "long, cold seventeenth century" of endless war, endemic revolt, and economic turbulence (LADURIE; DAUX, 2008).[5]

What followed was capitalism's first *climate fix*. This reinforced the earlier thrusts of empire and capital across the Atlantic, itself a response to the climate-class conjuncture of the long *fourteenth* century. This long, cold seventeenth century was, for an emergent capitalism, the most unfavorable moment of the Little Ice Age. *Unfavorable* is deliciously imprecise. Suffice it to say that it was more than *uncomfortable*. Climate conditions roughly comparable with the long fifth and fourteenth centuries had witnessed the epochal crises of the Roman West and feudal Europe.

How, then, did capitalism survive where previous civilizations did not?

The short answer? The Great Frontier (WEBB, 1954). That's a brutal shorthand of course. So let me explain. The entangled climate-class-financial conjuncture of the

[5] On New World genocides, see *Beyond Germs* (CAMERON; KELTON; SWEDLUND, 2015).

1550s contributed mightily to a productivist turn across the Americas and in eastern Europe (MOORE, 2010a; 2010b). This climate fix formed through a new, productivist-centered political exchange between bankers, empires, and New World commodity producers (PATEL; MOORE, 2017, p. 64-90).[6] The result was an environment-making revolution without precedent in scale, scope, and speed. Its surficial expression was a landscape revolution, but its real content involved an audacious revolutionizing of re/production, rule, and class formation. It developed novel and violent forms of proletarianization across the Atlantic, including modern slaving and other forms of racialized labor. And it grounded world accumulation within strategies of Cheapening the lives and labor necessary to produce the Four Cheaps: labor and unpaid work, food, energy, and raw materials.

I can do no more than gesture towards the major commodity frontier moments across this long, cold seventeenth century. A representative sample includes: 1) Brazil's sugar revolution starting in the 1570, displacing São Tomé after a momentary boom short-circuited by slave resistance; 2) Potosí's dramatic restructuring after 1571, definitively relocating capitalist silver mining from Central Europe to Peru; 3) the rapid-fire succession of forest product commodity frontiers from Norway to Poland to the northeast Baltic, commencing — again — in the 1570s; 4) aggressive enlargements of the Vistula's cash-crop cereal agriculture (and consequential deforestation) after 1550, providing an indispensable hedge against food insecurity for Dutch capitalism; 5) the rise of the "Potosi of the North," Sweden's Stora Kopparberg, sending copper (the lithium of the seventeenth century) to sugar planters, arms manufacturers, and artisans across the Atlantic; 6) the relocation of Iberian shipbuilding to the Americas, where places like Salvador da Bahia and Havana would boast important shipyards by the early seventeenth century; 7) the remarkable expansion of fishing fleets into the North Atlantic, marking a signal moment of the "Great Hunt"; and 8) the Caribbean sugar revolution, first making landfall in Barbados but rapidly extending to Jamaica and thence French islands like Martinique and St. Domingue. This is hardly an exhaustive list.[7]

The unprecedented character of this early capitalist environment-making revolution is impossible to overstate. Both scale and scope are impressive. Perhaps most significant, however, was its temporal character. In the long, cold seventeenth century, the "time of capital" sharply accelerated — and to quote Burkhardt, it did so "in terrifying fashion" (1979, p. 224). The antagonism between capital's drive to reduce socially-necessary turnover time systematically combined with imperialist projects to create the conditions for the appropriation of unpaid work — *accumulation by appropriation*. This marked the modern formation of the Femitariat and Biotariat — the specifically binarized moments of unpaid human and extra-human reproductive work necessary to capitalism's Cheap Nature regime. These were dialectically bound to an extraordinary acceleration of gendered, racialized, and colonial proletarianization (FEDERICI, 2004; LINEBAUGH; REDIKER, 2000; TILLY, 1984). This Great Proletarianization — understood as the differentiated unity of Proletariat-Biotariat-Femitariat — depended on the era's two pivotal frontiers: commodity frontiers across the Americas and eastern

[6] On political exchange, see Arrighi (2010).

[7] Detailed references to these and other epochal transformations can be found in Moore (2010a; 2010b; 2017d; 2018b). The "Great Hunt" is John F. Richards' term (RICHARDS, 2003). The "Great Hunt" is John F. Richards' term (RICHARDS, 2003).

Europe, and the Great Domestication, whose guiding thread held that Man stood before Woman as the Bourgeoisie stood before Nature. Great Proletarianization and Great Domestication were mutually dependent and mutually reinforcing, a dialectic essential to the seventeenth-century climate fix. Without Cheap Labor there were no workers to labor in — or profits to be ripped from — the fields, mines, workshops, forests, and cities of early capitalism. Without these forcibly extracted labor frontiers, moreover, the limits to appropriating extra-human work/energy (and associated environmental change) were insuperable. Every environmental sacrifice zone — then as now — depended on workers, successively cheap and disposable.

It was in this socio-physical conjuncture that capitalism's climate fix issued a "time-space compression" that degraded not only the soil but the worker (HARVEY, 1989). It ushered in epoch-making relations of power, profit and life that accelerated historical change beyond anything known before Columbus. For millennia prior to 1492, the pace of landscape change was measured in centuries. When peasants in medieval Picardy set about clearing land in the twelfth century, it took two centuries to clear 12,000 hectares. Fast forward to northeastern Brazil at the apex of its sugar revolution. During the glorious 1650s, Bahia's sugar mills compelled the destruction of 12,000 hectares of forest… *every year* (MOORE, 2017d).

The resulting destruction of the Atlantic rainforest was therefore a class dynamic. Some humans, the possessors of money and power, directed the work of other humans — how easily do we forget that the plantation slave was proletarian![8] These proletarians were — as ever under conditions of racialized and gendered superexploitation — disposable. As Marx knew, the devastation of "the soil" was the product of a regime that devastated the worker, and enriched the bourgeois, in this case the planters and the merchant-bankers that financed them. That regime's managerial logic, Schwartz observes in his classic study of class conflict in Brazil's seventeenth-century sugar zones, was simple enough: "extract as much labor at as little cost as possible" (SCHWARTZ, 1970, p. 317). (Marx intuited as much in the chapter on the Working Day in *Capital* (1977, p. 340-389). The commodity frontier was a demographic black hole; its commodities bled from every pore. A quarter-million African slaves who disembarked in Bahia and Pernambuco between 1600 and 1650. By the latter date, northeastern Brazil struggled to maintain a slave population of just 60,000. (Nor have we considered the Middle Passage's heartbreaking mortality.)

The exhaustion of labor-power in the fields and forests presumed not just terrestrial frontiers of seemingly limitless abundance, but also Africa's labor frontiers. For every landgrab and occupation, "physically uncorrupted" sources of fresh labor-power had to be found, secured, and supplied (MARX, 1967, p. 256). Every commodity frontier presumes a new labor frontier. And so it was that the sugar frontier joined with slaving frontiers within Africa, whose autonomous political dynamics increasingly articulated with the newly racialized "labor market" of the trans-Atlantic slave trade. Brazil's sugar revolution was of a piece with the geographical re-centering of the slave trade southwards towards Angola. By the dawn of the eighteenth century, the slaving frontier had exhausted coastal Angolan supplies. Its tentacles quickly reached far towards the interior (MILLER, 1988; THORNTON, 1992).

[8] On plantation proletarianization and the trans-Atlantic class struggles of the long, cold seventeenth century, see Linebaugh and Rediker (2000).

All of which informs the essential geographical insight of the commodity frontier approach: the very strategies of "ecological hit-and-run" underpinning the rapid creation and appropriation of Proletariat and Biotariat ensured their relative exhaustion. The pattern of socio-ecological exhaustion across commodity frontiers is clear. In one region after another, regional profitability faltered — again relative to potential greenfield sites on the frontiers. Crucially, as Marx observes about the exhaustion of *human* natures in capitalist production, such exhaustion is possible *because* of the frontier strategy itself — hence capital's dependence upon (and its political exchange with) empire. The shift from Brazil to the Caribbean after 1650 is a good example. Commodity frontiers were patterns of geographical movement, producing and produced by their socio-ecological antagonisms. This pattern of geographical movement was driven by a complex and multi-layered ecology of power, profit and life. In these studies of socio-ecological exhaustion, one quickly confronts a substantialist temptation — to see exhaustion as the depletion of substances rather than relations that involve substances. The point is anything but metaphysical.[9] *The exhaustion of successive commodity frontiers was tendentially — and on the ground, increasingly — increasingly overdetermined by proletarian revolt*. Haiti's sugar revolution was stopped dead by proletarian insurgency, not soil exhaustion (FICK, 2000; JAMES, 1989; SCHWARTZ, 1992).[10]

The exhaustion of the soil and the worker was indeed pivotal. They cannot be reduced to its regional moment. The commodity frontier was at once regional and systemic. Caribbean slaves, sugar, and soils were world-historical figures, and must be situated within worldwide capital flows, geopolitics, and transformations of metropolitan industry — as the Second Slavery after 1793 would demonstrate (TOMICH, 2004). The trail of socio-ecological devastation that followed in the wake of commodity frontiers is therefore most effectively situated within two historical-geographical layers — movements between regions, and movements between successive world hegemonies and the world-ecological regimes in which they are embedded. This allows us to join the imperial-bourgeois projects of remaking world nature to the opening of specific commodity frontiers, which in one era produce the conditions for new (and expanded) commodity frontiers in the next. Rising demand there was, but this accounts for only part of the geographical movement. "The commodity" and the "world market" play their roles, but the most prodigious increases in consumption — as cotton and sugar demonstrate — *followed* the most prodigious moments of primary output expansion (MOORE, 2017e). Commodity frontiers *enabled* metropolitan industrialization — which in turn reinforced pressures to intensify output. Was this not the case with Cheap cotton from the American South in the late eighteenth century? Marx thought as much, insisting on cotton's cheapness: "It was only the large fall in the price of cotton which enabled the [British] cotton industry to develop in the way that it did. The *dearer* the material…, the less are machinery and the division of labor applied in transforming it" (MARX, 1971, p. 368, emphasis added). This antagonism expressed yet another powerful contradiction, no less significant: between the expanded accumulation of capital and the simple reproduction of life. The movement of primary commodity production into new frontiers implied, and indeed necessitated the advance of primary

[9] This conception of exhaustion is therefore relational and not naively substantialist, as in the Malthusian frame. See Moore (2015).

[10] On the "turning point" of the Haitian Revolution see E. D. Genovese (1979, p. 82).

commodity production into yet newer frontiers whose “natural fertility” could “act like an increase in fixed capital” (MARX, 1973, p. 748).

TRANSITIONS, CRISES, AND THE PLANETARY PROLETARIAT AT THE END OF THE HOLOCENE

Marques demonstrates, through the commodity chain optic, that capitalism did not form within a reified Europe and then expand. Early capitalism’s commodity chains formed and reformed through dynamic webs of capital, power, and life. This was — as Marques underlines — a *productivist* turn. It was also deeply proletarianizing — albeit in a manner distinct from its stylized Eurocentric rendering.

I have done my best to sketch how the power of Marques’ argument may be extended by situating these commodity chains within the Great Frontier, grasped as unit of observation *and* as a decisive world-ecological strategy of the imperial bourgeoisie. That strategy is, ultimately, the strategy of Cheap Nature, aimed at creating the Great Frontier so that the Four Cheaps — labor, food, energy and raw materials — can be delivered into the vortex of world accumulation (WALKER; MOORE, 2019).

Capitalism, in other words, formed *through* the Great Frontier. Commodity frontiers — especially in sugar planting and silver mining — were the Great Frontier’s most spectacular crystallizations. (Others, like the Great Domestication of so-called women’s work, were equally decisive) (PATEL; MOORE, 2017). Frontiers, in this rendering, were not about linear boundaries on the edges of a cartographic projection (itself a frontier technology): they were strategies of power, profit and life, and geographical flashpoints of their contradictions. *Commodity frontiers* were, crucially, not regions as such but patterns of inter-regional movement. The *sugar commodity frontier*, in this rendering, was the grand arc of the sugar/slaving complex as it moved across the capitalist Atlantic. Friedrich Engels’ observation, in an 1873 letter to Marx, readily applies to commodity frontiers: “To identify the different kinds of motion is to identify the bodies themselves” (apud BANAJI, 2010, p. 58).

This geographical restlessness was not happenstance. The endless conquest of the Earth and the endless accumulation of capital are two expressions of a singular process: the rise and ongoing demise of the capitalist world-ecology (MOORE, 2015; 2014). Imperialism is the glue that binds the two moments together. The intimate connection between endless conquest and endless accumulation is not, however, well understood — even on the left. Many continue to believe that capitalism will continue “until the last tree is cut” (MOORE, 2017). But capitalism’s foremost rule of reproduction is not simply *grow or die*; it is in equal measure *conquer or die*. Every great wave of accumulation is premised on a new imperialism, whose chief world-historical task is to create a Planetary Proletariat — the differentiated unity of Proletariat, Femitariat, and Biotariat — suitably cheap and tractable to ensure renewed accumulation.

Capitalism does not *act upon* an external Nature. Capitalism *develops through* the web of life; it develops “specifically harnessed natural forces” whose contradictions progressively activate, in successive turns, capitalist booms and planetary necrosis. The commodity frontier thesis proposes that capitalism emerged through a prodigiously generative nexus of class and territorial power that appropriated the unpaid work of the Biotariat and Femitariat as the condition for proletarianization. Out of the Great Frontier strategy formed not only modern proletariats but also manifold forms of socially-

necessary *unpaid* work — above all, the Biotariat, understood as the quantum of extra-human nature put to work by capital and empire, and the Femitariat, the overwhelmingly feminized relations of overwhelmingly unpaid social-reproductive work. This trinity is not an eclectic and chaotic combination; it differentiates and unifies the imperial-bourgeoisie's *longue durée* effort to put webs of life to work as cheaply as possible. That *longue durée* strategy emerged, and has been sustained through the centuries, on the knife-edge of the Great Frontier, through its circuits of capital and empire.

May I close with a modest suggestion? Marques references the threat of "environmental collapse." Here Wallerstein's emphasis on *crisis* as fundamental turning points is perhaps more useful than collapse, which has become a trope of neo-Malthusian and neo-Hobbesian environmentalist thought (DIAMOND, 2017). Arguably its two greatest "test cases" are the crisis of the Roman West in the long fifth century, and the crisis of feudal Europe in the long fourteenth century (MOORE; MOLINERO-GERBEAU, 2021). The imagery is one of chaos and great suffering. The reality is more complex, and hopeful. Both eras were characterized by the resurgent power and creativity of the producing classes. They were "golden ages" in living standards for the vast majority.

Is today's crisis different? Surely it is. But the conjuncture of climate change, class conflict, and civilizational crisis bears close scrutiny. *Collapse* and the neo-Malthusian Imaginary yields a Green version of Thatcher's neoliberal dictum: "There is no alternative." But there *is* an alternative. It gestates in the womb of the Planetary Proletariat. An *analytical* alternative was sketched, nearly a half-century ago, by Immanuel Wallerstein. Reframing the crisis of feudalism as a "socio-physical conjuncture" shaped by the dawn of the Little Ice Age in relation to "generalized class war" between lord and peasant, Wallerstein grasped the nettle of the problem: transitions from one mode of production to another are class struggles in the web of life. And the *political* alternative? Here we find an antidote the mystifications of bourgeois naturalism, and the pious incantations of Man and Nature in the Anthropocene. We find instead the possibilities of the Planetary Proletariat in the Capitalocene.

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AUTHOR'S NOTES

AUTHOR DETAILS
Jason W. Moore: PhD. Associate Professor, Binghamton University State University of New York, Sociology Faculty, Binghamton, NY, United States.

CORRESPONDING ADDRESS
Department of Sociology, Binghamton University, PO Box 6000, 13902-6000, Binghamton, NY, United States.

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