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Epochality, Global Capitalism and Ecology

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Abstract: What type of capitalism do we live in today? My answer to this question draws upon two interrelated lines of argument. Firstly, I will argue that we inhabit an epoch of global capitalism. The precursors of this kind of capitalism originated from the late nineteenth century when the development of telegraph networks, modern transport systems and world time zones provided a global template for industrialisation and Western imperialism. From about 1980 a confluence of global events and processes bought a fully-fledged global capitalism into being. These included the collapse of Fordist Keynesianism, national Keynesianism and Soviet Communism along with First, Second and Third World demarcations; the international proliferation of neo-liberal policy regimes; the growth of transnational corporations in all economic sectors; the predominance of financialisation and the reconstitution of global workforces. Secondly, I will argue that the shift from organic surface energy to underground fossil energy intertwined the time of the earth with the time of human history as nature was being instrumentalised as a resource for humanity. Understanding the capitalist relations of power involved here requires that we rethink the emergence of industrial capitalism in the historical context of a world system built upon unequal socio-ecological exchange between core and periphery. Today, global capitalism has intensified the anthropogenic feedback loops associated with CO2 emissions and climate change and universalised the organisational frameworks of profit extraction and socio-ecological destruction. I refer here to the transnational systems of fossil fuel capitalism along with their interlinkages with financialisation and advertising/commodity fetishism. From the preceding lines of argument I will briefly outline the intra-capitalist and planetary-ecological crises out of which transnational coalitions of opposition might emerge.

Keywords: epochality, global capitalism, global modernity, real time, Anthropocene, Capitalocene, fossil capitalism

1. Introduction

Remembering the bi-centenary of Karl Marx's birth immediately invokes a simple yet complex question – what kind of capitalism do we live in today? If Marx, in a second life, was our contemporary what elements of the economic system would he recognise? Which of his arguments about capital would need revision and/or further development? With these questions in mind, I provide here an anthropogenic narrative of global capitalism's epochal distinctiveness. One central distinguishing feature – financialisation – will be considered in relation to Marx's own writings on the subject. Then, global capitalism is re-analysed from a global ecological standpoint which emphasises the instrumentalisation of nature and the multiple ramifications of growing fossil fuel emissions. In so doing, the strengths and weaknesses of Marx's environmental insights will be evaluated. After explicating the ecological crises of global capitalism, I will consider the prospects of collective action among oppositional groups and classes.

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2. Epochality, Globality, Capitalism

From about 1980, a new epoch of capitalism emerged centred around globalisation; a general referent for those processes of change which interconnect human activity worldwide (Jameson 2010; Held et al. 1999). Here, Alf Dirlik identifies a distinctive contemporary form of globalisation which he calls "global modernity" (2007). This contrasts with an older Eurocentric modernity associated with Western imperialism, colonialism and the presumption of civilizational progress. Global modernity is marked by a plurality of modernities arising from internally differentiated cultural histories – Confucian, Arabic, Islamic, African, Japanese and Western. The disappearance of the First, Second and Third Worlds after the collapse of the Soviet bloc allowed different modernities to intermingle across different geographic scales. Such developments also led to the reinvigoration of previously suppressed religions and ethnic minorities.

Multiple expressions of global modernity were enabled by the mass mediated transformation of print, speech and audio-visual materials and the exponential growth of Internet infrastructures. Interpersonal, international, transnational, global-local and trans-local modes of communication were enabled by the extensity and density of real time electronic networks. Cross border flows of news, fashion, music, and lifestyles converged with everyday socio-economic connections within and between diasporic communities. These same electronic networks also globalised capitalist systems of finance, management, production, labour exploitation and commodity exchange. And real time electronic communication projected a global present which obscured a major epochal shift toward global capitalism. To support these assessments, a short excursus on the nuances of epochality is first required.

Beyond simple definition, the nature and constitution of *epochality* is variously understood and essentially contested. From a natural-scientific viewpoint, human beings are enmeshed within long-term patterns of galactic, ecological and bio-social evolution. Evolutionary eras are demarcated within established scientific disciplines, such as cosmology, astronomy, geology, climatology, biology and geography. Within each discipline, epochal markers and periodisations are contingent upon new scientific discoveries and new technologies of investigation and experimentation. Natural-scientific conceptions of evolutionary change differ from views of history associated within the idea that epochs are brought into being by collective self-consciousness. From this perspective, human beings in different cultural settings have the reflexive ability to shape historical change and epochal understandings of historical time. On such matters, macro-historians who operate across disciplinary boundaries often hold different views about epochal demarcation. This, in turn, reflects discrepant understandings about the relative significance of continuity and discontinuity as drivers of historical change. Within French intellectual culture, for example, Fernand Braudel was convinced that manifestations of historical change occurred over extended timespans of *long durées.* Deep, enduring patterns of cultural demography, economic production, trade and institutional authority were privileged over conventional periodisations and any event-centred chronicles of history-in-the-making.

Braudel's perspective, as exemplified in the Annales School of historical enquiry, was opposed by Sorbonne Sociology Professor George Gurvitch. Historian Olivia Harris (2004, 164) has succinctly outlined his approach: "the outer surface of social reality is manifested in institutions, infrastructures, and organizations, while the hidden depths are dynamic, effervescent, the source of creativity and revolution". Gurvitch argued that the intellectual schemas of continuity should not be imposed upon the historical reality of breaks and unexpected contingencies. On this account, societies in history are constructed through the will of social actors. Major conflicts within society express

opposing manifestations of history. Braudel's view holds that the will of social actors is borne by historical processes and that the intellectual preference for discontinuity leads to arbitrary and artificial reconstructions of the historical process.

These countervailing perceptions of history and epochality are of global importance. For Braudel, the *long durée*, as a formulation of world history, supervened and flowed through regional, national and pan-regional histories. The opposing perspective foregrounds the punctuations of world history. Here, global historian Timothy Brook (2009, 381) suggests that an "unmanageable thick cable" of "interwoven historical narratives" and "local time lines" can be cut across "in a way that touches all timelines but declines to reproduce any of them, by narrating global history in terms of moments".

The demarcation of epochs is not necessarily an objective exercise. In the European context, Kathryn Davis criticises a secularisation narrative whereby a feudal and religious Middle Ages centred upon salvation presaged the evolution of Renaissance humanism, Enlightenment values and modern political ideologies. The associated emergence of mercantile and industrial capitalism reinforced the idea that the past could be delineated retrospectively. For Davis, tacit acceptance of this narrative, and the periodisations within, legitimises a reductive account of European history and distorts the writing of global history. More specifically, she states that "the sixteenth and seventeenth century writing of a 'feudal' past for Europe mediated the theorisation of sovereignty and subjection at crucial moments of empire, slavery and colonialism" (Davis 2008, 7). On this reading, the construction of epochs serves the interests of institutionalised power and obfuscates oppositional demarcations of historical change.

3. Global Capitalism

From the preceding discussions, I would argue that the epochal distinctiveness of contemporary global capitalism cannot be appreciated without a sense of its historical antecedents. There are continuities as well as sharp discontinuities between earlier and later forms of capitalism. One learns this from Dwayne Winseck and Robert Pike's account of global communications expansion between 1860 and 1930 (Winseck and Pike 2007).

In Western capitalist countries and the largest urban regions in the developing world, railway and telegraph networks proliferated. These networks interlinked with steamship routes to interconnect major cities such as London, Paris, New York, Berlin, Vienna, Istanbul, Cairo, Bombay, Peking, Singapore, Tokyo, Mexico, Buenos Aires and Rio de Janeiro. At the same time, an international system of news gathering and dissemination became coordinated by commercial news agencies (e.g. Reuters, Agence France Press, Havas, Associated Press). From 1900, global communications expansion intermeshed with the construction of electricity grids, lighting systems and wireless networks. Within this general overview, one must also include the establishment and gradual implementation of world time zones, meridians and the international dateline. These developments contributed to the emergence of an integrated world economy, especially among the major countries (Winseck and Pike 2007, 43). The process of integration was coterminous with the economic imperialism of Western European nations generally and Great Britain in particular. In the latter case, Mike Davis (2001) depicts a "late Victorian world economy" centred around financial supremacy and a favourable balance of trade framework which disguised Britain's industrial decline (relative to Germany and the United States). Without detailing the contours of this world economy, it is clear that the prosperity of Britain and other imperial powers depended upon the dispossession, exploitation and marginalisation of non-Western cultures. One

must also acknowledge that early modern communications, transport and time zone grids underpinned the later emergence of global modernity and global capitalism. What took shape, though, was not simply a new phase of world economic integration (after an intervening period of world wars, depression, decolonisation and Cold War geopolitics). The epochal distinctiveness of contemporary global capitalism derived from a confluence of world-historical events and developments. It is these that I now consider.

Political economist William Robinson (2004) argued that world economic activity had become dominated by transnational corporations (firms with headquarters in more than three countries). He drew from various World Investment Reports published by the United Nations Conference on Trade and Development (UNCTAD) and from privately commissioned financial reports to outline the growth of such corporations (7,000 in 1970, 60,000 in 2000) alongside the increase in cross border mergers/acquisitions (Robinson 2004, 55; 58). Between 2000 and 2007 inclusive, such deals in excess of US$1 billion totalled 1,335 (compared with 479 from 1992 to 1999) (UNCTAD 2008, 5-6). In all areas of capitalism, cross border mergers and acquisitions have affected horizontal and vertical integration, global economies of scale and strategic alliances (in the areas of financial syndications, capital investment, research and development distribution and marketing). By 2000, the 500 largest transnational corporations controlled approximately 80 percent of the world's foreign investment, 30 percent of global output and 20 percent of world trade (Buckman 2004). Subsequently, transnational corporate investment was drawn to the urban-industrial growth poles of South and East Asia. The emergence of China as the world epicentre of low-cost manufacturing at the expense of large Western economies provided new profit opportunities for transnational corporations.

Such developments suggest that the initial integration of the world economy between 1860 and 1930 has advanced considerably in scale and density. During the 1980s and 1990s, with the proliferation of neoliberal policy regimes and the collapse of the Soviet bloc, national circuits of capital became functionally integrated into new global circuits of capital accumulation. In this context, Robinson argues that there has been a "progressive dismantling of autonomous or auto-centric national production systems and their reactivation as constituent elements of an integral world production system" (Robinson 2004, 16). This relies upon a vast mosaic of supply chains involving raw materials mining, subcontracting, outsourcing and allied arrangements. These developments draw our attention to the "global worker" (Dyer-Witheford 2010, 2015), variegated by an increasingly complex division of labour strongly associated with the service sector, universalised by the incorporation of female workers, the growth of production centres outside the West and flows of migrant labour. New jobs and occupations with many hierarchies are connected directly to information-communication technologies (ICTs) as indicated by the rapid growth of the internet and mobile phone use. The computer industry, for example, contains a software sector incorporating business applications and digital games designed and engineered in North America, Western Europe and Japan. Programming jobs have been typically outsourced to subcontractors in Eastern Europe, South Asia and South East Asia. In the hardware sector, salaried engineers and architects design and prototype phone, gaming and specialist computer devices. Assembly of these devices has been performed in Central America, Eastern Europe and southern China. Manual labour also entails mining the specialist minerals necessary for consumer electronics and excavating parts from toxic e-waste disposal sites in Asia and Africa (Dyer-Witheford 2010, 2015; Fuchs 2013).

From these observations, it is evident that information-communication technologies (ICTs) became a new and substantial sector of capital accumulation. Hardware, software and dot.com corporations joined landline-based telecommunication corporations who could develop or purchase Internet services, cable and broadband connections, satellite hook-ups and wireless communication services (Harris 2001). By 2003, 18 of the top 100 non-financial corporations came from the ICT sector (World Investment Report 2005, 267-269). Between 1995 and 2000, the telecommunications industry ranked second after commercial banking in the global mergers and acquisitions market (Jin 2005, 295). The emergent ICT sector engaged with a media-entertainment system transformed by convergences of technology, content ownership and cultural consumption. Advances in Internet applications, digital television and mobile telephony blurred traditional separations between broadcasting, computing, telecommunications and consumer electronics.

Media-ICT infrastructures precipitated real-time networking within and between transnational corporations. For Manuel Castells, this was an historic development indicated by the pre-eminence of the "network enterprise". Within this organisational model, firms remained the primary unit of capital accumulation, property rights and strategic management while routine business practices were performed by flexible and ad hoc networks (Castells 1996, 2001).

The co-evolution of global finance with ICT infrastructures was pivotal to the formation of global capitalism. This process stemmed from the disintegration of national Keynesianism and the Bretton Woods monetary system and by the emergence of a Eurodollar market, the precursor of a vast, stateless banking system. It is important here to appreciate that investment banks, commercial banks, insurance companies and new financial organisations, such as hedge funds and private equity firms, were not just a means of intermediation among businesses. Rather, they were pro-active corporate operators who "targeted changes in macro-economic fundamentals, prices of underlying commodities (like corn and oil), market indices (exchange rates, the price of bonds and shares), financial indicators (e.g. interest rates) or aggregate indicators (e.g. stockmarket indices)" (McKenzie 2011, 202). The general purpose was to take financial positions across multiple indicators over specified periods of time. These were manifestations of derivatives trading; contractual agreements between willing parties to buy or sell a stock, bond or commodity at a future date at an agreed price. After Bretton Woods, such trading became a routine risk-management exercise for financial institutions, transnational corporates, merchant importers and export producers.

Crucially, however, derivatives also became a central means of speculation. Thus, *financial* derivatives did not involve assets which were associated with bulk commodities or grounded in production. Rather, they became exclusively connected to the medium of money and its technological means of circulation; underlying assets did not have to be purchased or sold. Edward LiPuma and Benjamin Lee, in their *Financial Derivatives and the Rise of Circulation*, pointed out that financial derivatives grew "exponentially, starting from virtually nothing in 1973 to become 30 years later, according to estimates produced by the Bank of International Settlements, the planet's largest, most profitable and most influential market" (LiPuma and Lee 2005).

This new and unprecedented phenomenon exemplified the broader processes of financialisation whereby M-M profit circuits become internalised within the whole of capitalism. Relevant developments included shareholder-driven structures of corporate governance, the direct involvement of non-financial corporations in financial markets and the financial liberalisation of banking and monetary policy in developing coun-

tries (Lapavitsas 2013). Overall, financialisation is more than a longstanding cyclic phenomenon of speculation and collapse, a parasitic deviation from the "real" economy or an epiphenomenon of over-production or underconsumption. More accurately, as Christian Marazzi argues, "we are in a historical period in which finance is *co-substantial* with the very production of goods and services" (Marazzi 2011, 27-28).

In Marx's time, finance and money were largely incorporated within the world expansion of industrial production and trade. Nevertheless, even from our contemporary standpoint, his insights remain prescient. In *Capital Volume One*, Marx argues that for capitalism to reproduce itself money capital has to be realised through production, productive capital must be realised in commodity form, and commodities must be realised as money in market exchange. Money surpluses accruing to capitalists can then be reinvested in production. This general sequence depends upon the extraction of surplus-value from labour during the production process. In *Capital Volume Two*, which explicitly addresses the circulation of capital, Marx explains that merchant capitalists may purchase commodities cheaply and sell them at a profit (M-C-M') and that money lenders and speculators may employ money to create monetary profit (M-M'). This latter circuit, notes Marx, may form "an independent movement peculiar to [the individual capitalist's] capital value, a movement which proceeds in part within the general circulation of commodities, in part outside it, but which always retains its independent character" (Marx 1885, 136). Through this lens "the production process appears simply as an unavoidable middle term, a necessary evil for the purpose of money-making" (Ibid., 137). Consequently, "all nations characterized by the capitalist mode of production are periodically seized by fits of giddiness in which they try to accomplish the money-making without the mediation of the production process" (Ibid., 137). Marx also realised that worker incomes could be expropriated by financial profiteers independently of the production process. According to Costas Lapavitsas (2013), certain passages from the *Theories of Surplus Value* maintain that the charging of interest to workers is unrelated to the extraction of surplus-value. In the *Grundrisse* and *Capital Volume Three*, Marx discusses the practices of usury. For Lapavistas (2013, 145), these understandings of expropriation are "vital to the analysis of financial profit earned from trading financial assets as well as from capital gains". He remarks that "financial profit earned from mortgage and consumption loans to households or from handling pension or other funds" may accrue to "the holders of financial assets or to financial institutions as fees, commissions and proprietary profits" (Ibid., 145). Clearly, these manifestations of financialisation are more fundamental to capitalism today than they were to capitalism in the nineteenth century. Our critical understanding of them, however, derives, initially, from Marx's writings.

As explained, the demarcation of epochs can be historically misleading and ideologically driven. Ruling power-blocs periodise the past and direct the future in order to advance their hegemonic interests. The arrival of global capitalism, however, was unannounced beyond the scattered milieus of Left intellectuals and anti-corporate activists. Transnational ruling elites and classes, supranational state organisations and neoliberal governments instead propagated a discourse of market forces, market freedom, individual choice, liberalisation, deregulation and globalisation, in contradistinction to the perceived failures of Soviet-bloc statism and national Keynesianism. Such circumstances led one leading Western intellectual to eschew epochal history altogether.

> What we may be witnessing is not just the end of the Cold War, or the passing of a particular period of post-war history, but the end of history as such: that is,

> the endpoint of mankind's ideological evolution and the universalization of Western liberal democracy as the final form of human government. (Fukuyama 1989, 1)

Francis Fukuyama further claimed that the exhaustion of viable alternatives to Western liberalism was built into the worldwide spread of consumer culture, television technology and diverse music expression (Ibid.).

Beyond the obvious Western hubris, Fukuyama's "end of history" thesis comported with the communicational and informational affordances of global modernity. The ubiquitous spread of real time electronic networks facilitated a de-historicised cosmopolitan global present. Ideological manifestations of real time pervaded communication frameworks, architectures and lifeworlds: for example, global television news, Internet fora, social media platforms, cyberculture, cityscapes of spectacular consumption and transnational corporate branding. In the latter context, Robert Goldman and Stephen Papson's analysis of television advertisements from transnational corporations across all economic sectors revealed a metanarrative of global interconnectedness and universal humanism. Such advertising told a "de-historicized story about capital" (Goldman and Papson 2011, 202). Capitalism had no apparent source and existed in "the form of grand signifiers that appear to be autonomous in every sense except for their relationship to the individual subject" (Ibid., 202). These findings can be read as an ideology critique of Fukuyama's "end of history" and as a verification of global capitalism's epochality.

4. Earth, Epochality and Global Capitalism

Understanding the ecological dimensions of global capitalism requires us to reconcile natural-scientific chronologies of epochal change with anthropogenic accounts of how people collectively construct their own epochal histories. This realisation underlines Paul Crutzen's 2000 declaration that the Anthropocene should follow the Holocene on the Geological Time Scale (Hamilton, Bonneuil and Gemenne 2015; Crutzen 2002). He and fellow researchers argued, from stratigraphic evidence, that human activities involving large-scale carbon (CO^2) emissions had measurably changed the global climate such that a new geological turning point could be identified. Subsequently, a range of other scientists from climatology, biology, oceanography, geo-chemistry, atmospheric chemistry and orbital satellite programmes maintained that the Earth system was shifting into an Anthropocene epoch characterised by anthropogenic global warming, ocean acidification, melting ice sheets, sea-level rise and species extinction. These outcomes, in the absence of adequate counter-measures, point to a hotter world, unruly climate, extreme weather events, submerged coastal settlement, mass migrations, destroyed agricultural systems, new, unequal sufferings and violent geopolitics. In short, we confront "the reality that human action and Earth dynamics have converged and can no longer be seen as belonging to distinct, incommensurate domains" (Hamilton, Bonneuil and Gemenne 2015, 3).

This judgment is scientifically valid but historically misleading. That life on earth is fragile and uncertain for every species results from the particular actions of powerful vested interests rather than "human action" per se. The conventional Anthropocene narrative excludes the fact that certain industries, enterprises and classes have been primarily responsible for increasing CO^2 emissions and overlooks the insight that capitalist expansion has been contingent upon unequal socio-ecological exchange (Angus 2016; Bonneuil and Fressoz 2016).

Marx was aware of this inequality even though he sometimes saw the development of productive forces as an inevitable feature of human progress. Within *Capital Volume I*, such ambiguity is encapsulated in the section on "Large-Scale Industry and Agriculture". Marx states, in defence of the nutrient cycle, that "all progress in capitalistic agriculture is a progress in the art, not only of robbing the labourer, but of robbing the soil; all progress in increasing the fertility of the soil for a given time is a progress toward ruining the more long-lasting sources of that fertility" (Marx 1867, 638). In a preceding passage, Marx declares, from an evolutionist perspective, that "conscious, technological application of science replaces the previous highly irrational and slothfully traditional way of working" and that the "capitalist mode of production completes the disintegration of the primitive familial union which bound agriculture and manufacture together when they were both at an undeveloped and childlike stage" (Ibid., 637). He does acknowledge that this "creates the material conditions for a new and higher synthesis, a union of agriculture and industry on the basis of the forms that have developed during the period of their antagonistic isolation" (Ibid., 637).

The nature of this possible synthesis, however, is not explored. The strongest case for Marx's ecological prescience has been advanced by John Bellamy Foster. He argues, along with other researchers, that Marx conceived of a metabolic rift between human societies and nature resulting from the destructive logic of capital. Awareness of this rift revealed environmental perspicacity rather than deference to the inevitable advance of the productive forces (Foster 2000; Foster, Clark and York 2010). In defence of this position, Michael Löwy links Marx's section on "Large-Scale Industry and Agriculture" (section 10 in *Capital Volume I*'s longest chapter "Machinery and Large-Scale Industry", see Marx 1867, 636-639) with a corresponding chapter from *Capital Volume III* entitled "The Genesis of Capitalist Ground Rent" (Marx 1894, 917-952). Both chapters consider the relationship between industry, agriculture and soil exhaustion. For Löwy, they reveal Marx's understanding of the metabolic rift "between human societies and the environment" under capitalism (Löwy 2017, 15). In the introduction (Chapter 37) to *Capital Volume III*'s part six that holds the title "The Transformation of Surplus Profit into Ground Rent", Marx observes that:

> "the entire spirit of capitalist production which is oriented towards the most immediate monetary profit – stands in contradiction to agriculture, which has to concern itself with the whole gamut of permanent conditions of life required by the chain of human generations" (Marx 1894, 754, Footnote 27).

From this and other passages[1], Marx is seen to perceive a radical opposition between "the immediatist logic of capital" and the possibility of a form of an agriculture "based on a much longer temporality and in a sustainable and intergenerational perspective, which respects the natural environment" (Löwy 2017, 16). Overall, the association Marx makes "between the brutal capitalist exploitation of the proletariat and of the earth" is said to lay "the theoretical ground for a strategy articulating class struggle and ecological struggle, in a common fight against the domination of capital" (Ibid., 15). One can concur with the purpose of these struggles while acknowledging the historical limits of Marx's prescient contributions. On this matter, Joe Kovel observes that critical conceptions of unequal socio-ecological exchange were not fully understood during

[1] Löwy's citation of the relevant passage draws upon an earlier 1959 translation of *Capital Volume III* from the Institute of Marxist-Leninism Moscow and International Publishers in New York.

Marx's time. The debasement of eco-systems on a planetary scale only become publicly apparent during the late twentieth century. And the idea that prefigurative eco-socialist communities (arising from climate justice activism) might complement working class struggle was entirely unanticipated during Marx's lifetime (Kovel 2011).
Those who criticise today's anthropogenic discourses from a left-ecological perspective hold different positions on the periodisation and sharpness of epochal change. After considering some of these differences, I will argue that the epochal distinctiveness of global capitalism has a planetary-ecological dimension.

Within a modernising nineteenth-century world economy integrated by trade, time zones, and transport and communication networks, the British industrial revolution accelerated coal extraction and CO^2 emissions. For Andreas Malm, these concurrent developments were the foundation of fossil fuel capitalism and anthropogenic global warming (Malm 2016a). Although the earth system effects of early fossil fuel combustion were cumulative rather than immediate, their historical significance is retrospectively clear. Beginning with coal, Britain produced 80 percent of global CO^2 emissions in 1825 and 62 percent in 1850 (Malm 2016a, 13). Eventually, the extraction and consumption of fossil fuels spread to other capitalist economies in Western Europe and North America. A further spike in carbon emissions occurred between 1950 and 1973 with the spread of oil-fuelled patterns of Fordist production and consumption and the increase in international air travel (McNeill and Engelke 2014; Bonneuil and Fressoz 2016; Brevini and Murdock 2017).

These accounts suggest that the entirety of industrial capitalism became locked into carbon-energy extraction, CO^2 emissions and the multiple feedback loops of anthropogenic global warming. Jason Moore, however, insists that anthropocenic and eco-socialist narratives based on the industrial revolution de-emphasise the significance of the Capitalocene – the intercontinental expansion of mercantile capitalism and the instrumentalisation of ecological nature from 1450 to 1750. This period saw the deforestation of European landscapes, the plunder of gold, silver, copper, iron, forest products and wildlife from the Americas and the enslavement of indigenous and African populations. Their collective labour drove entire systems of agriculture and trade based upon spices, cereals, tobacco, sugar and cotton. Thus, the Capitalocene was built upon the systematic appropriation of labour power, food, energy and raw materials. These "four cheaps" (cheap labour, cheap food, cheap energy, cheap raw materials) underpinned the relations of power and wealth that emerged after 1450 and made possible the nineteenth- and twentieth-century fossil fuel booms (Moore 2015; 2016; 2017a; 2017b).

More recently, Moore argues that the potential sources of 'cheap nature' have contracted sharply. Since the 1970s, low-cost frontiers of oil extraction – in Alaska, the Gulf of Mexico, West Africa and the North Sea – have been superseded by high-cost frontiers in Northern Canada. There, plentiful tar sand deposits are carbon intensive and expensive to refine. Meanwhile, there are no new land frontiers on which to grow cheap food, just as global warming undermines the existing capacities of livestock farming and crop growth. In China, the world's last reservoir of massive cheap labour is diminishing. Since the early 2000s, growing worker militancy in ports, cities and industrial estates has pushed up wages (Moore 2016). Moore remarks that "today there is nowhere to run. Much of what we have seen global capitalism achieve over the past decade has been a shifting of costs – from one capitalist to another- and especially from capital to the vast majority. And, there has been another vector of cost shifting which has been accelerating in recent years: from the present to the future" (Ibid., 114).

Moore proceeds to cite “financialisation and the polarisation of income and wealth” as primary indicators of social and temporal cost shifting (Ibid., 114).

At the same time, increases in CO^2 emissions reflect the interlock between transnational corporate expansion and China’s manufacturing boom. Between 1751 and 2010, half of all CO^2 emissions from fossil fuel combustion occurred after 1986. Since 2000, the rate of CO^2 emissions growth has tripled compared to the 1990s. From 2000 to 2006, 55 per cent of such growth worldwide derived from China; in 2007 that figure was 66 per cent (Malm 2016a, 328-329). Over these years, China’s economic transition from agriculture to industry required abundant reserves of cheap labour and cheap energy resources (domestic coal and imported oil). The state needed to finance the building of power plants and electricity grids capable of delivering coal-based energy to manufacturing plants. Finished goods were sent to major ports and domestic/overseas markets via oil-consuming road, rail and air vehicles. Thus, as China became the epicentre of world manufacturing, multiple corporations profited from each element of the capital realisation process – energy extraction, assembly line production, transportation and commodity exchange. Malm succinctly outlines the global-epochal nature of these developments.

> Globalisation has produced the greatest separation between energy, production and consumption in documented history, the chains often taking fossil fuels from deposits in one country to combustion in another where commodities are manufactured for sale in a third; every year more carbon – solid and embodied – is shuffled across borders. (Malm 2016a, 374)

Yet the geo-spatial totality of carbon intensive global capitalism is not readily apparent. The real-time imperatives of a globally-mediated consumer culture occludes the economic origins and temporal ramifications of anthropocenic climate change. This is not a one-way process, however. As I will explain, crisis tendencies within global capitalism allow transnational coalitions of opposition to develop.

5. Global Crises

The illusion of a globally mediated present which transcends epochal history cannot be sustained, universally or indefinitely. Global capitalism as such is riven by financial and earth-ecological vectors of crisis. Together, their manifestation generates obstacles and opportunities for the proponents of eco-socialist change. In general, crises arise from internal contradictions whereby a system rule or course of action generates an opposing system rule or course of action (Bhaskar 1991). These countervailing tendencies may proceed to a point of crisis such that system reproducibility cannot be guaranteed. Crises of capitalism and its earth-ecological foundations are temporally ambiguous. They can open up breakthrough possibilities involving relations of production, new forms of social production, new political organisations and new socio-ecological projects. Equally, however, the temporality of crisis can instil a sense of repetition rather than future possibility (Osborne 2010). Official attempts to remedy a crisis situation may simply reproduce its underlying contradictions.

The 2007-2008 financial crisis, for example, reflected the incommensurability between the realisation of capital and financial speculation. In the former process, as I have described, money capital is realised through the production process, productive capital is realised in the form of commodities, and commodities are realised as money in market exchange. Money surpluses throughout the capitalist economy are, potentially, reinvested in production. However, this general schema M-C...P...C’-M’ cannot

be guaranteed; the employment of money to generate speculative profit (M-M') circumvents and disrupts the capital realisation process. The realisation of capital occurs *over* time. Business-related knowledge systems such as registries, clearing houses, balance sheets, account statements and audits are inherently chronological. They maintain commercial and public memory such that businesses can make soundly-based, future-oriented decisions. But within global capitalism, these sequential and temporal requirements contradict the real time imperatives of M-M' speculation and the short-termist profit calculations of financialised corporations.

This contradiction became apparent during the 2007-2008 financial crisis. Unfolding events were driven by a perfect storm – over leveraged investment banks engaging in undocumented derivatives speculation, the securitisation of Anglo-American household debt, the spread of Anglo-American mortgage derivatives and the unprecedented global connectivity of these developments. The bankruptcy of Lehman Brothers in September 2008 was a global news event which sent panic waves through the multi-billion dollar commercial paper and short-term money markets. Within 36 hours, collapsing stock markets wiped US$ 600 million off global equity prices. Consequent bank failures throughout the United States and Western Europe were followed by a worldwide recession which drove more than 50 million people into extreme poverty (Soederberg 2010).

The new ideas, institutions and policy directions which might have stabilised the global capitalist system were not available. Thus, the Anglo-American bank bailouts, the creation of bank holding companies and light-handed financial regulation reproduced the contradiction between capital realisation and M-M' circuits of financial speculation. Over-the-counter derivatives trading, a cardinal feature of M-M' circuits and financialised capitalism, remained. Investment banks and other financial interests strongly resisted the G20 conference directive of April 2009 that standardised derivatives contracts "should be traded on exchanges or electronic trading platforms where appropriate and be cleared through central counterparties by the end of 2012 by the latest" (Morgan 2012, 405).

As national and supranational attempts to remedy the financial crisis reproduced the excesses of financialised capitalism, the burden of crisis shifted to governments, national polities and citizens. In the US, UK and Western Europe, debt-ridden banks were recapitalised out of tax revenues and the sale of government bonds to financial institutions. The subsequent introduction of austerity policy packages in those countries and others led to uncontrollable recessionary spirals, worsening poverty and social dislocation. Although China's 2008-2009 neo-Keynesian stimulus package diverged from this structural tendency, such a response cannot be guaranteed in future (Cook 2012; Harris 2012). China's further integration into the global economy with its financial volatilities is helping to establish the preconditions for a larger and less manageable world financial crisis.

More fundamentally, global capitalism cannot continue without destroying the ecological and biospheric wellsprings of its existence. The growing cost of monetising the "four cheaps" (energy, raw materials, food, labour) coincides with the intensification of greenhouse effects and anthropocenic feedback loops as CO^2 emissions increase further. Without adequate countermeasures the next 100 years will see rapid deteriorations of our physical environment. Global warming, temperature increases, sea-level rise and extreme weather will threaten the cohesion of societies, economies and political systems. If one considers this predicament from a time-related perspective, an underlying contradiction becomes evident – the evolutionary dynamics of geo-biospheric time and the temporalities of human life it contains clashes with the short-

termism of unrestrained capital accumulation. As Andri Stahel has observed, systematic fossil fuel extraction exemplifies this contradiction:

> […] the value of these fuels is given by human production time which is only the labor required to capitalize them and not the millions of years of the systemic time within which they were produced. From the long span of systemic time and its long term processes, the carbon cycle entered the short term and accelerating historical time of the capitalist accumulation process (Stahel 1999, 128).

Under present conditions, the accelerating short-termism of capital accumulation is myopic and the "long term processes" of geo-biospheric evolution are existentially threatened. However, the resulting global crisis unfolds differently from the global financial crisis even though they are integrally connected. As Rob Nixon observes, the violence of socio-ecological destruction is "neither spectacular or instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales" (Nixon 2011, 2). Yet, evidence of these worsening repercussions, and their coordinated logic, cannot be entirely hidden. The inchoate sense that an earth system crisis is at hand cannot be ignored.

These two crises of global capitalism have precipitated militant political responses worldwide. A detailed account of these is not possible here. I will instead outline the minimal threshold for an effective counter-power coalition and identify the key modalities for collective practice. Organised labour, throughout China and worldwide, must expand its capacity to disrupt, synchronically, the just-in-time supply chains of transnational corporations. Successful strategic outcomes will require multilevel alliances with the precariously employed and the wageless poor. Next, a coalition of counter-power should draw upon the early objectives of the Occupy movement to build a global protest network explicitly focused upon the delegitimisation of financialised capitalism.

Associated research hubs should also inform alliances of populist anti-austerity movements with the capacity to develop pre-figurative forms of socio-economic cooperation and the electoral mandate to claim local and national state power. The eco-socialist dimensions of this coalition centres around the transnational climate justice movement and its uncompromising defence of the ecological commons. As Andreas Malm has suggested, its substantive manifesto should include, at the very least, a complete moratorium on all new facilities for extracting coal, oil or natural gas, the non-fossil fuel generation of electricity, especially wind and solar, major public investment in renewable energy projects, the cessation of forest burning and the initiatives of massive reforestation programmes (Malm 2016b).

Across different localities, multiple formations of ecological and socialist activism should challenge global capitalism's capacity to erase its own historicity. This requires a collective sense of globality which extends beyond the general nomenclature of globalisation. Oppositional coalitions must nurture a two-level epochal awareness which stresses global capitalism's universal structure as well as the multi-perspectival standpoints of those who confront its material reach and power. Such an accomplishment will enable serious public reflection on the *finitude* of global capitalism – a necessary precursor to the rupture of the system. Oppositional constructions of global-epochal consciousness must temporalise the global present such that historical patterns of socio-ecological depredation, including CO^2 emissions, are given contemporary relevance. Correspondingly, the impact of geo-biospheric depletion on the futurity of social relations and human life must be recognised as a precondition for revolutionary change.

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