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Fossil Capital: The Rise of Steam Power and the Roots of Global Warming

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The Progress of This Storm: Nature and Society in a Warming World

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“In the Heat of this Ongoing Past”: Three Lessons on Energy, Climate, and Materialism

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The thermometer can be legitimately suspected as a barometer of the rolling invasion of the past into the present.¹

In a warming world, the past materially invades the present and future. Decades after Fukuyama’s declaration of the supposed end of history, the sentiment could not be farther from the truth. In the wake of intensified anthropogenic climate change, the result of centuries of pumping CO₂ into the atmosphere, history is made present, if it indeed ever left us the first place. We can feel it; we will continue to feel it. To confront and alter this course of history, we must think historically and we must think materially. This thesis is the kernel around which Andreas Malm’s *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming* (Verso 2015) and *The Progress of This Storm: Nature and Society in a Warming World* (Verso 2018) are shaped. Turning his attention to the energy transition that offered the bedrock for the energetic relations of today, Malm’s *Fossil Capital* investigates the transition from the use of water power in industrial production to coal-fueled steam power, or as Malm understands it, from

“flow” to “stock” — terms Malm employs to describe animate and inanimate energy forms more precisely. In this transition, he finds a reorganization of the forces of production that strengthened capitalist relations and established the foundations for the fossil economy we know so well today. *The Progress of This Storm* broadens the scope of *Fossil Capital*, interrogating conceptions of relations between humans and nature in a warming world while taking to task popular theoretical movements such as constructionism, new materialism, hybridism, and posthumanism. In doing so, Malm ultimately argues for a renewed attention to historical materialism and radical politics as a means through which to confront what he calls the “warming condition.”

Taken together, Malm’s works are not only compelling for the ways in which they develop an account of energy as a social relations through intricate research of past transitions or for how he builds a vision of the relation between society and nature that provides the foundations for moving beyond the political and agential deadlock that he asserts is the consequence of much contemporary thinking of nature. These particular characteristics of *Fossil Capital* and *The Progress of This Storm* respectively are, to be sure, significant and productive lines of thought. But the larger contributions Malm’s work makes are in the ways that the future figures into the past and present as a space for possibility in both positive and negative registers. In other words, the diagnoses of the past and present that *Fossil Capital* and *The Progress of This Storm* together provide contain within them a prognosis as well, a program for a more socially and ecologically just future alongside stark recognitions of the consequences of maintaining business as usual. If we are to understand the present and the possible futures (both desirable and undesirable), then we must understand past and present materially.

There is no doubt, however, that Malm’s criticisms of both emerging and dominant views of nature and society found in *The Progress of This Storm* will leave a bad taste in some mouths, particularly for those who have critical allegiances to the methods and theories that he places in his critical sights. Some trajectories in Malm’s critique of new materialists and posthumanists in particular could be attended to in a more careful manner, including the ways in which Malm understands the role of nonhuman animals in production and the question of whether or not animals labor, as well as in the scale through which artificial intelligence continues to develop in relation to production. There is, further, a value in those modes of thought that demonstrate similarities between, for instance, animals and humans at a time and in a system that historically relies on the subjugation of one for the betterment of the other. Yet this is not Malm’s aim in criticizing those who see hybridity rather than separation in the world. His point, instead, is that by taking on a position of hybridity in a moment constitutively marked by separation and inequity, one risks further reproducing such separation and inequality, regardless of intention. It is worth pointing out as well that many of these characteristics of what I have identified as a kind of new historical materialism emerge from conversation with and against positions put forward by the

likes of Latour and others.

Despite these objections to some aspects of *The Progress of This Storm*, in both *Fossil Capital* and *The Progress of This Storm*, Malm offers us three important lessons to help us understand the dynamics of climate change and to build the radical politics necessary to combat it.

“Capitalism gave birth to the fossil economy”

Early in *Fossil Capital*, Malm references Marx’s oft-cited observation from *The Poverty of Philosophy* that “[t]he hand-mill gives you society with the feudal lord; the steam-mill, society with the industrial capitalist.”² Much ink has been spilled over this statement, especially considerations of its degrees of economic and technological determinism. Rather than take Marx at his word, Malm revises the classical formula by inverting it, declaring that “steam begets capital — not the other way around” (Fossil 33). “More precisely,” he elaborates, “steam engenders the division and organisation of labour we recognise as typically capitalist” (Fossil 33). Given the task to find the most important statements in *Fossil Capital*, one could certainly do worse than these two. Indeed, this inversion serves a crucial purpose in illustrating the conclusions of Malm’s investigation into the rise of steam power, the solidification of the fossil economy, and the seeding of the roots of global warming.

In the transition from flow to stock, Malm does not find the conventional story of the Industrial Revolution — one based on, among other things, human innovation discovering ways to technologically overcome natural limits. These accounts are widespread, found in the pages of books like William Rosen’s 2012 study of the rise of the steam engine, *The Most Powerful Idea in the World: A Story of Steam, Industry, and Invention*, which traces the steam engine’s invention and its later widespread adoption to an “idea,” ascribing to the steam engine a quasi-mystical status that Malm names in *Fossil Capital* as a kind of “steam fetishism.” Summarizing popular views of the days of rising steam power, Malm cites Michael Angelo Garvey, who “suggested that the ‘real prime mover and director’ of steam was ‘the mind itself’ — the sheer intelligence of Britain’s engineers” (Fossil 218). In contention with such view, Malm instead finds in this transition from flow to stock a materialization of the kinds of class-based struggles endemic to the Industrial Revolution’s birthing of the bourgeois and proletarian classes. Just as the Industrial Revolution *in toto* was not a smooth, uncontested affair aimed at increasing efficiency of productivity for the benefit of all, neither was the adoption of steam power. The *dramatis personae* in this tale are not benevolent inventors fueled by the forces of transcendental human innovation and progress, but *a ruling class* that sought to strengthen its position further as a ruling class. Malm’s wager follows this point, “that steam arose as a form of power exercised by some people against others” (Fossil 36). At the core of this claim is the understanding of fossil fuels — and indeed energy in general — as a social relation. As Malm puts it:

No piece of coal or drop of oil has yet turned itself into fuel, and no humans have yet engaged in systemic large-scale extraction of either to satisfy subsistence needs: fossil fuels necessitate waged or forced labour — the power of some to direct the labour of others — as conditions of their very existence. (*Fossil* 19)

Becoming fuel, put simply, is a fundamentally *social* process; the stock does not animate itself.

Ultimately, Malm's account in *Fossil Capital* demonstrates the ways in which energetic relations are embedded in social and economic relations by showing how the transition from water to steam, or the "flow" to the "stock," was an intentional transition on part of the bourgeoisie, creating the conditions for intensified industrial-capitalist relations of production by simultaneously "deepening" both capital and the production and consumption of fossil fuels. It was not the historical inevitability found in techno-utopian, teleological accounts of the adoption of fossil fuels that cite its economic and material efficiency. Visions of the past such as these have remained dominant, shaping our historical experience of and relation to the fossil economy beyond the bourgeois circles. In *The Progress of This Storm*, Malm critiques Jason Moore's thesis of the "Four Cheaps," which asserts that "[f]or profit rates to be high, nature [food, labour-power, energy and raw materials]... must be cheap" demonstrating how even Marxist accounts of energy can internalize and prioritize the kinds of worldviews that suggest the way to solve the global ecological crisis is through interventions at the level of cost and price, at the level of the market (Malm *Progress* 191). Such logics result in popular claims that, for instance, coal was adopted because it was *cheaper* than other energy sources. But this transition was not the result of rational actors adopting a new, cheaper technology — *it was class warfare*. Malm's summarizing argument that "[s]team was advanced as the materialised power of the bourgeoisie" then serves as a powerful, politically mobilizing point, suggesting that there exists a materialized power beyond and against the bourgeoisie that is collectively attainable (*Fossil* 218). This is precisely why Malm points out in the opening pages of *Fossil Capital* that "the next transition cannot share the canonical features of the British Industrial Revolution; above all, this time it would have to be *collectively planned*" (*Fossil* 14, emphasis in original).

"Less of Latour, more of Lenin: that is what the warming condition calls for"

"Not too long ago," Alexander Galloway writes in his contribution to *Questionnaire on Materialism* (2016) "being a materialist meant something rather specific, despite the capacious; it meant one was a Marxist." However, he continues, "[t]hese days materialism generally means non-Marxism."³ It is within this setting — a setting marked by tension between old and new materialisms, between Marxisms and non-Marxisms — where Malm's *The Progress of This Storm* stages its primary polemical interventions with fervor and with particular attention to the relationship between

nature and society as conceived in these visions of old and new. *The Progress of This Storm* is, in the first instance, both a virulent critique of prominent contemporary understandings of nature and society and a simultaneous defense of a renewed historical materialist approach to nature that serves as a foundation for a radical politics capable of addressing global warming and altering its current path of further intensification. Its rhetorical mode hearkens back to Friedrich Engels' *Anti-Dühring* (1878), which served as a polemical space for Engels to build the vision of a historical materialist project through a methodical criticism against the claims of idealistic, utopian socialism as articulated by the eponymous Herr Eugen Dühring.⁴ *The Progress of This Storm* could in turn be alternatively titled *Anti-Latour*, as much of Malm's critical energies are directed towards challenging Bruno Latour's influential oeuvre — who, as Malm reminds us, is known to have said “[l]ike God, capitalism does not exist” — and its consequences for thinking and acting in nature and society in a warming world.⁵

For Malm, the material turn, embodied in work from figures such as Jane Bennett, Bruno Latour, and Timothy Morton, problematically flattens the agencies of humans and nonhumans, including objects and things, at a time when a particular class of humans continues to disproportionately affect both social and natural relations. At the core of new materialist thought is the assertion of a fundamental agency in all that surrounds us and is in part a reaction to the hegemony of constructionism within social science and humanities disciplines. Malm's account and critique of dominant approaches to the nature-society relation develops through a careful historicization of the major shifts in humanities and social science discourses as expressed through a spectrum of dominant modes of thought in the latter portion of the twentieth century and into the twenty-first — from constructionism and hybridism, to the more recent of posthumanism and new materialism, none of which Malm finds suitable for confronting the problems of the day, namely the warming condition.

What Malm views as a widespread and particularly troublesome characteristic consistent throughout the epistemologies of these divergent schools of thought relates primarily to the question of boundaries and of separation. In constructionism, hybridism, posthumanism, and new materialism, dichotomies and separations are considered as powerful fictions established, maintained, and reproduced by Enlightenment discourses; this, of course, is a fundamental insight derived from post-structuralism that permeates through many of these schools of thought and their relatives. Such positions that problematize separations *tout court* are tied to other major shifts in the humanities and social sciences, including most recently a movement against critique — a practice some thinkers believe reproduces the problematic epistemologies that place human rationality above all else, to the detriment of all else. Enter what is commonly referred to as the post-critique school, a school of thought building on the work of Eve Kosofsky Sedgwick, whose practice of reparative reading distinguished from paranoid or suspicious reading (that

is, critique) forms its methodological core. Here, Malm takes aim at Rita Felski, a figurehead of the post-critique school and noted Latourian. Taking on her position that asks “instead of criticizing institutions, can we also learn to trust them,” Malm observes that not only does trust in institutions maintain the status quo and produce climate denial, it perpetuates inequity.⁶ “The demographic segments least invested in the prevailing order and therefore most prone to mistrust it — inhabitants, of the global South, women, people of colour, the left — are also most appreciative of climate science” (*Progress* 136). In other words, it is easy to flatten when in one occupies a privileged position in a pre-flattened social, ecological, and economic landscape.

Malm’s solutions to the impasses of the warming condition are clear. Both *Fossil Capital* and *The Progress of This Storm* contain varying levels of calls to action that form a sort of two-pronged approach: (1) a commitment to *historical* materialism that sees in the warming condition a set of particular historical circumstances and (2) a commitment to a radical politics that is capable of intervening upon and dismantling the fossil economy. As a means to develop both of these positions, Malm proposes a framework of socialist climate realism that contains three central tenets: first, that “social relations have real causal primacy in the development of fossil energy and technologies based on it”; second, “by recursive loops of reinforcement, these relations have been cemented in the obdurate structure of the fossil economy”; and third, “that totality has in its turn fired up the totality of the earth system, so that (some) humans have real reason to be afraid” (Malm *Progress* 149).⁷ The language Malm uses here is telling — “social relations,” “causal primacy,” “totality” — as it taps into the kind of lexicon that many whom Malm builds his position against (e.g. Latour) hope to do away with. Malm’s reasoning for turning to what can be called a new historical materialism, articulated in the wake of the rising popularity of flattening, and in maintaining separations is convincing: “When eight individuals — as of 2017; the number seems to shrink as fast as CO₂ concentrations rise — possess as much wealth as half of humanity, one cannot afford *not* to draw lines of separation” (*Progress* 189).

“It is a bad time to call it a day for radical politics”

The degree to which fossil fuels and other secondary forms of energy such as electricity have become embedded in the everyday lives of so many across the globe, but especially the West, over the past century is staggering. Political economists of energy, such as Bernard C. Beaudreau, name this dynamic energy deepening, a process deeply entwined with the rise of capitalism as a dominant mode of production.⁸ Without directly engaging this vocabulary of energy deepening, Malm’s *Fossil Capital* is primarily centered on a key historical episode that further cemented this deepening — that is, the Industrial Revolution in general and the shift from flow to stock in particular. This deepening of both fossil and capital is precisely what the signifier “fossil economy” aims to hone in on as it points towards the energetic and economic

foundations of fossil fueled society, what Malm calls the “two partners of the fossil economy”: “self-sustaining growth” and “energy from the stock” (*Fossil* 47). This partnership has and continues to intensify inequality through, for instance, lack of access or, more significantly, the disparity of the consequences of burning the stock, which affects less affluent populations more than the affluent populations of affluent nations who set the fire in the first place. Those who take the fossil economy for granted are in turn those most deeply attached to it. “If the fossil economy is a train that never stops but always accelerates, even when approaching the precipice,” Malm writes, “the task is to pull the brakes (or maybe jump off) in time, and if there is a driver who seeks to keep this from happening, she has probably been seated in the locomotive for some time” (*Fossil* 15). A cultural, ideological, and material deadlock results from energy deepening, as Malm’s metaphor demonstrates, wherein the future is enclosed by the influence of those “seated in the locomotive for time”; a fossil-fueled life is understood as all that is reasonable and desirable though this need (and must) not continue being the case.

If energy deepening is linked to capital deepening, and both are processes that cement particular social, ecological, and economic relations that, among many other things, overwhelmingly contribute to the warming condition, then the solution cannot occur solely in the domain of the economic or the technological. The solution, it follows, is a political one. Malm’s commitment to radical politics runs deep in both *Fossil Capital* and *The Progress of This Storm*. In radical politics, Malm finds the tools necessary for a widespread, collective intervention into the fossil economy that seeks as its first aim to shut that economy down. If the bourgeois classes could do it in the nineteenth century and continue to do it well into the twenty-first with fossil fuels, then there is no reason that a proletarian class could not also do so by dismantling the fossil economy and developing an alternative, more equitable energy system now and in the future. This is precisely why I find in both *Fossil Capital* and *The Progress of This Storm* undercurrents of a politically enabling sense of possibility in addressing the warming condition. Such possibility shines throughout *Fossil Capital* when Malm discusses an energy transition through “solar provenance” (*Fossil* 38) and in the closing pages when he speculates about the necessity of “a return to the flow” (*Fossil* 366). “Our best hope,” Malm writes, “is an immediate return to the flow” that utilizes the vast amounts of available solar energy, including wind (*Fossil* 367). A transition in this way would carry with it an altogether different, more equitable set of relations than those that have become normalized under the fossil economy. The future remains uncertain, but it is clear that in the heat of the past we should “[e]xpect more gifts of history to be withdrawn, one after the other, primarily from those who never received very many of them in the first place” (Malm *Progress* 219). It is in this heat from the past that our future is shaped and to alter its course demands a radical politics able to intervene on a wide scale to halt the continued expansion of the fossil economy and its role in perpetuating the warming condition.

Notes

1. Andreas Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming* (London: Verso 2016).
2. Karl Marx, *The Poverty of Philosophy* (London: Martin Lawrence Limited, 1847), 92.
3. Alexander Galloway, *A Questionnaire on Materialism, October 155* (2016): 45.
4. Friedrich Engels, *Marx and Engels Collected Works, Volume 25* (Moscow: Progress Publishers 1987).
5. Bruno Latour quoted in Malm, *The Progress of This Storm: Nature and Society in a Warming World* (London, Verso 2018) 148.
6. Rita Felski quoted in Malm, *Progress of This Storm* 136.
7. For more on the aesthetics and politics of climate realism, see the forthcoming (2019) special issue of *Resilience* edited by Lynn Badia, Marija Cetinic, and Jeff Diamanti, as well as recordings of a 2017 Media@McGill colloquium organized around the topic. <http://www.climaterealism.ca/conference-videos/>
8. Bernard C. Beaudreau, *Energy and the Rise and Fall of Political Economy* (Westport, CT: Greenwood Press 1999).