What is the relationship between fossil fuels and capitalism? Given the crises around energy and climate change, it is alarming that this question has only recently become an issue in the Marxist literature (see, e.g., Altvater 2006; Huber 2009; Keefer 2009). Other scholars have tried to examine the integral role of fossil fuels in the construction of politics—coal, oil, and notions of mass democracy (Mitchell 2011)—and cultural production—oil and film, for example (LeManger 2013). Yet, the question of the specific congruities between the materiality of fossil fuel and the social relations of capitalism eludes much of the new literature on energy, or is simply deflected by the historical existence of fossil fuel powered communism. With (as of this writing) the new President-elect in the United States assembling a veritable petro-state, these questions could not be more important.

With Andreas Malm’s *Fossil Capital* we have a commanding answer. The wager of the book is that we can learn a lot about this question by revisiting the historical transition to fossil fuel power in early 19th century England. To be more specific, Malm examines the industrial transition in the “hidden abode” of material production from water power to coal-based steam power. This is a risky wager. Delving into the minutiae of factory production 200 years ago might seem remote and unrelated to contemporary globalized capitalism. Yet, Malm’s clear and impassioned writing makes crystal clear the political stakes of this historical analysis. He shows that capital’s preference for “stock” energy like coal in the 19th century (when compared to flow energy like water, sun, or wind) is as relevant today as it was back then. He also leads us through this history to a set of theoretical conclusions (Chapters 11-13) and satisfying closing chapters
(13-16) on the contemporary challenges of the fossil economy (focusing on China and the social barriers to renewables). The other risk of the book is its sheer girth (488 pages, 394 of which constitute the main text). When I received it from the publisher, my first thought was that the book must be too long. Yet, I was proven wrong: each chapter feels utterly necessary to the flow and direction of the argument which builds step by step to the final set of political critiques of contemporary climate politics.

The primary strength of *Fossil Capital* is its political clarity. Malm isolates a set of political “vested interests” (p.14) as the main barrier to solving climate change, but this is not a particularly new insight. To push this notion forward, he refreshingly directs the explanatory blame for the climate crisis away from *consumers* and toward *producers*; or, to put it more clearly, *capitalists*. But, unlike most of the climate left today, the villainous “producers” are not just the obvious capitalists: The Koch Brothers, “Big Oil”, and “Big Coal”. To understand what Malm calls the “fossil economy” we cannot only focus on the geographies of fossil fuel extraction, but also how fossil fuel commodities become the inputs to massive infrastructures of industrial production, transportation, and consumption.

For Malm, the core problem is capital’s political control over production itself—a set of property relations wherein individual capitalists control the “means of production” toward a single-minded goal of “accumulation for accumulation’s sake” (Marx 1976:742). In his historical analysis, he focuses on coal and steam powered textile mills in Britain. Today one could also look into the role of energy in the production of a whole spectrum of commodities such as automobiles, chemicals, steel, cement, and smartphones.

This political clarity becomes most insightful in Chapter 14, “China as the Chimney of the World”. There is a strain of environmentalism that blames China for being the top global emitter of greenhouse gases. Traveling upwards on the “Environmental Kuznets Curve”, the
global North has righteously cleaned itself up via enlightened environmental regulation and a “dematerialized” knowledge economy. If only China could cooperate and save the planet. Of course, many critics have rightly pointed out the hypocrisy of such logics. Isn’t it “us” (the greedy American consumers above all) who consume all the exports from China? Aren’t those Chinese emissions embodied in the trade and products that we casually consume? Malm manages to destroy both of these narratives by pointing out that it is not “us”—the consumers—who are mostly to blame. Nor is it “China”—a somehow territorially contained entity. It is not consumers or countries, but capitalists who own, control, and profit from industrial production (and thus the bulk of emissions) in China. Many of these capitalists are, of course, based in the United States. Companies like General Motors that own factories in China or companies like Apple and Walmart who subcontract production there. If we want to stem the tide of emissions, we need to focus our political efforts on the capitalist control of production.

The book is theoretically informed but not dense. Overall, Malm is most indebted to the Robert Brenner and Ellen Meiksins Wood school of historical materialism which argues we must define capitalism by its peculiar property relations and market forces. In explaining the transition to fossil fuels, Malm critiques three different perspectives. First, the Ricardian-Malthusian narrative which argues that scarcities of land and fuel made fossil fuels necessary (e.g. Wrigley 2010). Second, the Anthropocene narrative which explains the fossil economy in terms of a universal “human” propensity toward fire and combustion (e.g. Clark 2012). Third, the technological determinist narrative (including several Marxists) that argues it is simply steam’s technical superiority that explains its rise.

Malm mostly demolishes all of these perspectives to show the most compelling explanation of the shift to steam power is the social power of capitalists and the particular form of private property relations which shape their actions and ideologies. Capital chose steam
despite the fact that water power was cheaper, more abundant, and potentially more energy efficient. The problem is water is a “flow” energy system (like sun or wind) that is hard to capture or commodify. Capital prefers “stock” resources like coal that can be controlled and privatized. This is laid out most compellingly in the chapter titled “Fleeing the Flowing Commons” (Chapter 6). He explains the sophisticated plans by engineers to develop water powered industrial agglomerations in the early-to-mid 19th century. Hydraulic engineers laid out great plans for dams, reservoirs, and other systems to save and share water so that it could be most efficiently used to its greatest potential. Yet, the cotton capitalists ultimately failed to locate there. Why? They worried centralized bureaucracies would dictate their power consumption. They worried other private capitalists would “steal” or “free ride” on the water power and take more than they deserve.

Sound familiar? It should. Ultimately, the property relations of capitalism made individual capitalists suspicious of an energy resource system based on flow, the commons, and, above all, collective management and planning. Capital preferred coal powered steam engines not because they were inherently more powerful, or cheaper, or more abundant, but because they allowed for privatized control over energy. Malm cites a historian of water power in the United States to tell a similar story. Manufacturers were dissatisfied with water power because they found “their independence of action variously restrained” (Louis Hunter, quoted on p.117). Conversely, steam power, “provided a means of escape and independence…With engine and boiler the millowner could do as he pleased, virtually without let or hindrance” (emphasis added by Malm). As someone who has studied how oil provided the material conditions for a suburban geography of privatism and anti-collective politics, I was led by Malm to the realization that there is something really important about the “stock” nature of fossil fuels themselves. They can be extracted and easily commodified into tons or barrel units. This allows not only privatized
forms of material control over energy systems, but also privatized ideologies that conflate the power of the stock with the individual capitalist or suburbanite him/herself.

It is quite eye-opening when Malm fast-forwards to the current moment in Chapter 15, “A Return to the Flow?”, to reveal precisely these same social and property-based barriers to a transition to renewables. For example, although many on the left were horrified by the Desertec plan to enclose much of the Moroccan desert to create a solar farm for Europe, Malm points out it failed because capital could not figure out how to share and/or profit from solar power (p.376-377). Perhaps the primary problem with solar and wind is not their “intermittency”, but the fact that they represent an unenclosable commons. The machines that harness this energy can be privatized commodities (solar panels, windmills), but once they are set up they can harness free and inexhaustible energy. This is not a long term strategy for private accumulation. Moreover, harnessing the “flow” or the “commons” ultimately requires the kinds of collective planning that private capitalists are allergic to (this is the main point of Klein [2014] as well).

This being Antipode, I should also point out that Malm offers a very interesting geographical analysis of these dynamics.1 It turns out, capital not only preferred steam over water power because of its easy commodification, but also because of its geography (laid out in Chapter 7). While water power was fixed and scattered throughout the countryside, coal and steam could be concentrated in urban districts of mass production. Although Malm points out the “agglomeration economies” from such concentration (that has been the endless concern of economic geography), the most important aspect of spatial concentration of production is capital

1 This is somewhat marred by his awkward claim that social theory has become too obsessed with “space” at the expense of “time” (p.6)–and he blames David Harvey and Neil Smith for this spatial fix(ation). You barely have to skim the surface of Harvey’s work to understand his analysis is one focused on the “space-time” dynamics of accumulation and class struggle.
can locate “where labor is easily procured” (p.121). Rural water powered production was almost necessarily remote. Malm details that this gave capital two options: either enslave women and children to brutal factory production, or create cushy “company towns” where workers were happy enough to stay in the sticks. In contrast, urban spaces contained an oversupply (and thus politically weakened) pool of labor “trained to industrious habits” (John Ramsey McCulloch quoted on p.124, emphasis added by Malm). Thus, steam not only allowed for privatized control over energy, it provided a material basis for the domination of capital over labor.

There are also temporal advantages laid out in Chapter 8. While water power is subject to natural variation (droughts and freezes), steam power offers constant power under the control of the capitalist. It is somewhat surprising that Malm doesn’t acknowledge until page 275 that Marx himself laid out these spatiotemporal advantages very clearly in Capital.² This is where I might point out a slight quibble, or at least a question I have. Is it possible these advantages of steam are not only socially superior to specific capitalist property relations, but also materially and technologically superior because of these spatial and temporal limits based in the nature of water power? This question throws a wrench into Malm’s critique of the “technical superiority” thesis. I think it is probably unlikely we could have seen the historical development of anything like our current urbanized industrial society based solely on water power. Fossil fuels not only provide

² This one quote from Marx condenses the insights of Chapters 7 and 8: “…the use of water-power as the main motive force brought with it various added difficulties. The flow of water could not be increased at will, it failed at certain seasons of the year, and above all it was essentially local. Not till the invention of Watt’s second and so-called double-acting steam-engine was a prime mover found which drew its own motive power from the consumption of coal and water, was entirely under man’s control, was mobile and a means of locomotion, was urban and not—like the water-wheel—rural, permitted production to be concentrated in towns instead of—like the water-wheels—being scattered over the countryside and, finally, was of universal technical application, and little affected in its choice of residence by local circumstances” (1976:498-499).
“motive power” for things like steam engines, but also “heat energy” for heat-process industries like chemicals, steel, and cement (which form the material basis for we call the “built environment” of urbanization). It could be argued that these fossil fuel heat-process industries made possible a much larger-scale harnessing of water power in the form of hydroelectric dams built with concrete and steel. In the realm of prime movers for industrial production, steam power itself historically transitioned to electricity, which, as Gretchen Bakke’s (2016) recent book points out, is a very “uncooperative commodity” (to use the phrase from Bakker [2003]). The grid requires massive collective planning and shared infrastructure to balance supply and demand, and yet capital found a way to harness electricity in ways conducive to private accumulation.

These questions do not lessen the utter brilliance and lucidity of this book. It is one thing to blandly declare some big thing called “capitalism” is the cause of the climate crisis. It is quite another to meticulously show how capital’s specific structural imperatives and property regimes create a special congruence between the materiality of fossil fuels and private accumulation. Moreover, as most climate solutions are framed in the realm of “exchange” (consume these products, price carbon differently), Fossil Capital reminds that the real solutions lie in addressing the “hidden abodes” of production (see Huber 2017). It is the private control of production for profit that is at the heart of the problem. We need to think more deeply about what an ecologically conscious socialist form of production would look like. And fast.
References


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January 2017