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MARX AGAINST TECHNO-OPTIMISM

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In the influential new book *Marx in the Anthropocene: Towards the Idea of Degrowth Communism*, Japanese academic Kohei Saito argues that Karl Marx made a theoretical breakthrough in later life. He abandoned his earlier interest in the development of productive forces and the possibilities raised by this for the realization of socialism. Marx intensively studied a range of topics including soil science and communal societies in this time and became what Saito refers to as a degrowth communist. Relatedly, according to Saito, Marx's ecological work had a different character to that of Friedrich Engels. Saito bases his analysis on a careful analysis of Marx's written work, including previously unpublished notebooks as well as theoretical engagements with theories of metabolism and metabolic rift. He shows how this remains relevant today in developing an ecological socialism that is cognizant of natural limits to growth and therefore capable of addressing capitalism's unsustainable relationship to the natural world. Saito argues strongly that socialists cannot rely on technological solutions to ecological breakdown. His conception of ecological Marxism tends to play down discussions of socialist and working-class strategy. However, it nevertheless contributes much to our understanding of Marx as a non-determinist and non-Eurocentric thinker as well as someone whose work was grounded in materialist ecological thought.

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I. INTRODUCTION

In September 2019, millions of people around the world walked out of schools, universities, and workplaces in a global climate strike to demand political action on climate change. Nearly five years on, there is still considerable frustration that what seems to many like an existential catastrophe is treated as a low priority issue in mainstream political thinking, evidenced by the absurd decision to host the 28th annual United Nations climate talks in Dubai, under the chairmanship of the head of the United Arab Emirates' national oil company. The climate movement receded from the streets in the face of covid. However, if anything, the movement has become

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more radical. There are still many people prepared to take action, including direct action and civil disobedience, to try to halt the use of fossil fuels. Amongst many environmental activists it is almost common sense that the problem is rooted in a profit-driven capitalist system. It is not hard to see why. Scientific research is very clear as to the need to avoid burning fossil fuels; yet, the global oil and gas industry continues to operate and realise profits for its shareholders, with most companies planning to expand their operations (Carrington, 2023). Furthermore, climate change is also increasingly understood by activists as an issue of climate justice. There is a real interest in drawing links between ecological catastrophe and topics such as neo-colonialism, racism, and restrictions on refugee movement. Hence, former school strike leader Greta Thunberg also joins demonstrations in solidarity with Palestinians and links issues of climate justice with opposition to the genocide in Gaza.

Kohei Saito's latest book *Marx in the Anthropocene* contributes to debates about the status of Karl Marx in these discussions even though, as this review will argue, it poses a challenge to some understandings of Marx's thought. If it seems self-evident that the capitalist system is at the root of ecological degradation, then perhaps that is enough reason in itself to want to revisit the writings of Marx—the theorist par excellence of capitalism. Marx has also, it is argued, provided his readers with a method. Marxism is not just a concrete analysis of where profits come from and why different firms compete in a capitalist system that is now global. It also seeks to uncover the dynamic processes that led to the development of capitalism and offer a route out for those who want to change the system.

The current interest in these ideas is illustrated by the success of Saito himself. Although he sometimes modestly suggests that Marxism is unpopular, the evidence suggests otherwise. A more accessible outline of his ideas published in Japan and titled *Capital in the Anthropocene* sold half a million copies (Dooley & Ueno, 2023). Saito's previous book, *Karl Marx's Ecosocialism: Capital, Nature, and the Unfinished Critique of Political Economy* (Saito, 2017), won the Deutscher Memorial Prize, a measure of the importance of his work to Marxist thinking internationally. At a recent launch in Berlin for the German translation of *Marx in the Anthropocene*, hundreds of people queued to see him speak (see Rosa-Luxemburg-Stiftung, 2023). Leaflets distributed at the event encouraged attendees to join protests against Elon Musk's electric car gigafactory nearby. These factories have been consistently opposed by some environmental groups in Germany due to the impacts on local wildlife and water supplies and due to concerns about the human and environmental impacts of lithium mining to create batteries for electric vehicles (see Hickel, 2020, p. 143 on lithium mining).

At the heart of Saito's argument is his own evident discomfort with the idea that, under a future communist society, we could look to technological development to provide luxury to workers. Industrialisation in self-described communist states in the Soviet Union and in China today has had devastating consequences, calling into question uncritical celebrations of technology, a linear model of 'progress', modernization, and economic growth. The Aral Sea that crosses the border between Kazakhstan and Uzbekistan was all but drained and turned toxic under Soviet agricultural policies

begun in the 1950s to give just one example (see Dreyer, 2023 on the Aral Sea and Smith, 2020 on China). Saito is equally critical of techno-optimist narratives of solutions to climate change in capitalist states such as the roll out of nuclear power, especially since the Fukushima Daiichi nuclear disaster in 2011 that laid bare the risks of nuclear power for him and for many other young Japanese people. Saito rightly does not think reformist measures such as re-using plastic bags will go far enough to address the current situation of ecological breakdown (Rosa-Luxemburg-Stiftung, 2023).

Although it has important implications for contemporary debates in the environmental movement, much of Saito's work has been Marxological, consisting of systematic studies of Marx's own written work including unpublished notebooks that have only gradually become available to scholars after Marx's death via the MEGA project (*Marx-Engels-Gesamtausgabe* or *Complete Works*, see Saito, 2022, p. 172). This review will discuss three interlinked points that Saito makes in building his argument. Firstly, that Marx apparently abandoned his interest in 'productive forces' and discarded historical materialism after about 1868, causing him to completely rethink his whole approach. Secondly, that the relationship between Marx and his contemporary Friedrich Engels needs to be reconsidered. Thirdly, that Marx in his later years tended towards something that we might now call degrowth communism.

II. THE ECOLOGICAL MARX

Importantly, Saito argues that Marx made a 'theoretical breakthrough' in around 1868. In this period, shortly after the publication of volume 1 of *Capital*, Marx intensively studied a range of topics including the work of natural scientists and discussions of pre-capitalist societies amongst anthropologists. This might be considered a diversion from actually completing *Capital*, which was originally intended to be a much more expansive work in multiple volumes. Certainly, Marx's published outputs slowed down at this point. However, for Saito, this turn to the natural sciences was far from a distraction. Saito argues that Marx needed to address these topics due to the shift he was making away from an invocation of the liberatory potential of 'development of the productive forces'. According to Saito, Marx's 'breakthrough' was profound and perhaps troubling to Marx himself as it called into question many of his earlier assumptions: 'His worldview was in crisis' (Saito, 2022, p. 173). Saito even goes as far as to say that Marx 'consciously discarded historical materialism' in this period (p. 182), an extraordinary thing to argue as historical materialism is sometimes used synonymously with Marxism itself. Understanding Saito's specific contribution to these issues necessitates a brief overview of some of the pre-existing debates in Marxist ecological thinking.

In his previous work, Saito tended to build on the contributions of the 'metabolic rift school' of Marxists associated with the US journal *Monthly Review*. Notable scholars associated with metabolic rift theory include the economist Paul Burkett, who sadly died earlier this year. Burkett made productive use of Marxist value theory to demonstrate the contradictions within capitalism between use values—the way items are valued for their usefulness to humans—and exchange value—the monetary value

of items as commodities that circulate on the market (Burkett, 1999). At around the same time, sociologist John Bellamy Foster developed and widely promoted an understanding of the theory of metabolic rift based on Marx's later writings, especially his comments in volume 3 of *Capital* (Foster, 1999). According to Foster's reading of Marx, the birth of capitalism created a 'rift in the metabolism between human beings and the earth' (Foster & Clark, 2018). Humans, like all living things, must maintain a metabolic interaction with our external surroundings. In the case of humans, we can regulate that relationship in a conscious manner through our ability to labour, unlike other animals who, according to Marx are more or less driven by instinct. However, under capitalism this ability to labour, an aspect of what it means to be human, is alienated from us—we do not work for ourselves but most of us survive by selling our ability to labour to our employers in exchange for a wage. For Foster and his colleagues this process of alienation has created a rift in the universal metabolism between humans and nature (Foster & Clark, 2018).

The concepts of metabolism and metabolic rift are general principles, but they can be illustrated in different ways. In Marx's day, one of the key ecological crises was the loss of soil fertility due to the organisation of agricultural systems under industrial capitalism. Today we might also point to the depletion of marine biodiversity, the loss of pollinating species or, of course, climate change as illustrative of the metabolic rift. They are all examples of how capitalism has reshaped ecological relations in ways that undermine the foundations of the system itself. For its proponents, Marx's interest in metabolism demonstrates that he was a materialist thinker, with a deep interest in the natural sciences. As Saito shows in his earlier work, Marx extensively studied the work of figures such as the soil scientist Justus von Liebig, influential in his understanding of soil fertility and the way in which agriculture removes nutrients from soil without replacing them—a form of 'robbery' agriculture (see Saito, 2017, p. 198, reviewed as Royle, 2019). As Saito discusses, Marx studied the way in which animal agriculture, even in the 19th century, led to the spread of viruses such as 'cattle plague' and how animals were generally made weak and vulnerable by being kept close together and inactive due to the desire to fatten them up quickly. Here Marx showed a concern for animal welfare as well as highlighting another example of the irrationality of the capitalist ecological regime (see Saito, 2022, p. 180).

The metabolic rift school were not the first to turn to Marxist ideas to point to the centrality of capitalism to contemporary ecological crises. Thinkers such as Joel Kovel, James O'Connor, and Kate Soper, for example, all creatively developed ecological readings of Marx, in some cases preceding the metabolic rift school by 20 or 30 years. In an influential work, Ten Benton (1989) supposed that there was a defect in Marx's and Engels' economic thought that left them unable to account for natural limits to capital accumulation—despite their materialist and ecological outlook. According to Benton, Marx emphasised human interactions with nature whereby humans carry out labour in order to produce some kind of intentional transformation in a raw material—for example, a carpenter producing furniture from wood. Of course, for Marx it is this exertion of labour power that imparts value into the finished items. However, Benton

points out that these kinds of processes are not universal to all types of labour. There are many activities, such as agriculture, where the role of labour power is not so much to transform the materials but primarily to regulate the environmental conditions under which plants or animals grow to the point where they can be sold—for example, ensuring that crops have enough water. Even in the case of manufacture, Benton points out that the material capacities and properties of raw materials limit the extent to which they can be manipulated. So, it is possible to talk of natural limits without adopting a conservative Malthusian outlook.

O'Connor proposed that there are two contradictions within capitalism, the first leads to crises of overproduction where capitalists exploit workers to the point where they produce too much, provoking a realisation crisis due to lack of effective demand. The second contradiction occurs when capitalists attempt to externalise their costs, including by freely appropriating from nature, in a manner that is self-destructive as the costs of, for example, clearing up pollution still need to be borne by capitalists as a whole. Whilst O'Connor's first contradiction is 'internal' to the capitalist system and concerns only the relationships between capitalists, workers and consumers, the second contradiction concerns the relationship between the system and an apparently somewhat distinct external environment (O'Connor, 1988; see also Royle, 2021b for a review of some of the different approaches).

Burkett and Foster have, therefore, suggested that there are two stages of ecosocialism where the first stage sought to identify opportunities to nuance Marx's understanding by combining his insights with ideas from environmental thought, for example by positing two contradictions (see Burkett, 2006, pp. 23–24). By contrast, the rift school or second stage ecosocialists emphasised the ecological content of Marx's own conception of capitalism. Rather than seeing the natural world as simply a backdrop against which human societies develop, Marx apparently viewed ecological relationships as integral to understanding the social world. The strength, therefore, of the metabolic rift approach is its potential to integrate an account of the alienation of labour and the effects of this on the natural environment. As Marx put it: 'All progress in capitalist agriculture is a progress in the art, not only of robbing the worker, but of robbing the soil' (Marx, 1867, p. 638).

The identification of the current geological epoch as the anthropocene—alluded to by Saito—also points to the systemic nature of the catastrophe. We are faced with not just a warming climate but a host of interconnected trends including desertification, nitrogen pollution, and rapid biodiversity loss, sometimes understood in terms of a crossing of planetary boundaries. However, the term anthropocene, a time period whereby anthropogenic processes are 'the major drivers of Earth system change' (Foster, 2023), has been strongly critiqued by some Marxists. Jason Moore rejects the terminology of the anthropocene, understood by him as meaning the 'age of humans', for the conceptual baggage it brings with it; an abstract and ahistorical idea of humanity pitted against an equally abstract nature. He prefers the alternative term capitalocene for the attention it draws to the way in which capitalism as an ideology works to 'violently devalue the ethical and cultural "worth" of human and

extra-human work and workers' (Moore, 2023, p. 128). Moore admonishes Saito for calling his book *Marx in the Anthropocene* on the basis that Marx himself opposed abstract understandings of 'Man' and because he sees Saito's work as a drift towards Malthusianism (Moore, 2023, p. 127). Saito does also recognise and outline some of the key left critiques of the term anthropocene and clearly wants to avoid the assumption that humans are equally responsible for ecological breakdown (2022, pp. 104–107). Nevertheless, he evidently finds the word anthropocene useful enough, partly because he prefers a kind of methodological dualism that differentiates human agency from non-human processes over what he describes as Moore's monism (pp. 118–120).

III. FORCES OF PRODUCTION

Marx has sometimes been accused of taking a 'Promethean' approach (Saito, 2022, p. 14), celebrating the unchecked development of technology in order to satisfy human needs and of neglecting to address the question of whether nature imposes absolute limits on this development. Indeed, in a series of well-known passages in the *Manifesto of the Communist Party*, Marx and Engels refer in florid language to the way the 18th and 19th century bourgeoisie had swept away the vestiges of feudalism. They seem to celebrate this as an advance on older forms of society:

> 'The bourgeoisie, during its rule of scarce one hundred years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of Nature's forces to man, machinery, application of chemistry to industry and agriculture, steam-navigation, railways, electric telegraphs, clearing of whole continents for cultivation, canalisation of rivers, whole populations conjured out of the ground—what earlier century had even a presentiment that such productive forces slumbered in the lap of social labour?' (Marx & Engels, 1848, p. 40).

Writing in the late 1840s, Marx and Engels were clearly interested in the dramatic technological changes going on around them—especially steam-powered industrial machinery and railways—and how this changed societies and the relationship with the natural world. At a time when workers faced extreme scarcity, difficulties in acquiring enough to meet their basic material needs, the founders of Marxism were interested in improving the living conditions of the masses (Graham, 2021, p. 24).

In the *Manifesto*, the development of the 'productive forces' is said to come into conflict with the relations of production (the way in which society is organised). In the same way that feudal society held back the development of technology, so too would the hold of the bourgeoisie impede or 'fetter' the further 'development' of society. Eventually, this contradiction might become so extreme that capitalism can no longer continue in the same way. One aspect of this wider contradiction is that capitalism brings working people together in large numbers in the workplaces, but this also allows them to organise together to form trade unions and demand better wages

and conditions, potentially also overthrowing the system itself. All of this gives a sense of the marching forwards of society driven by contradiction where the development of the productive forces, independent of and coming into conflict with the relations of production, is necessary to prepare the conditions for a new type of society. According to Saito's interpretation in *Marx in the Anthropocene*, the *Communist Manifesto* argues that capitalism will go into crisis, causing mass unemployment, which will elicit such suffering amongst workers that they will recognise their class consciousness and rise up in socialist revolution (see Saito, 2022, p. 174).

However, the meaning of the term 'productive forces' needs closer examination here. Although, as mentioned above, Saito associates the development of productive forces with a 'traditional' Marxist interest in new technology, he also asserts that the productive forces have 'to do with what humans can produce and how they do so' (Saito, 2022, p. 150), so it has a wider meaning than solely being about the invention of new types of machinery. Productive forces also include 'human productive capacities such as skill, knowledge and strength as well as natural conditions' (p. 150); hence, Marx and Engels describe them as slumbering in the lap of social labour. The development of the productive forces originates in the human capacity to labour rather than springing out of nowhere from the innovations of capitalists. The invention of steam-powered weaving machinery or artificial intelligence represent increases in the productive forces under capitalism. But so do innovations in the organisation of the workplace such as the way capitalism forces workers to cooperate with one another, which tends to speed up production but also involves a division of labour.

Crucially, Saito says these developments are to the advantage of the capitalists, but damaging to workers' interests. For example, the division of labour is associated with alienation from the process of production as individual workers do not develop the skills or autonomy over the labour process to create a whole product. The development of productive forces under capitalism is not only 'dependent upon the thorough reorganization of human metabolism with nature in the form of cooperation, division of labour and machinery' but 'the increase of productive forces *subordinates* workers to the command of capital more effectively' (p. 155, my emphasis). Far from paving the way for any further development towards socialism, this development actually decreases workers' ability to self-organise and build a different world. Saito also understands the development of productive forces as inherently ecologically destructive: 'the acceleration of productive forces will sooner or later make most of the planet uninhabitable before the collapse of capitalism' (Saito, 2022, p. 172). Saito says that Marx came to appreciate this perspective more in later life. So rather than forces and relations of production being two independent variables that are in contradiction with each other, the relations of production—i.e. capitalist social relations in this case—instead correspond to or align with the capitalist forces of production.

Saito is surely right to argue that capitalist economic crisis will not in itself create the conditions for a workers' uprising and that such a revolutionary break is not inevitable. When workers face hardship, such as an increase in the cost of living due to inflation, we do sometimes see an increase in the level of strikes, for instance in the strike-wave

over the past couple of years in Britain. However, there are many subjective as well as objective factors to this. Hardship can make people less willing to take industrial action too if they fear for their job security. It is also right to infer that Marx and Engels would have recognised this. Their youthful optimism about the prospects for revolution amid the revolutions of 1848–1849 is justified. But by the 1860s they had seen several economic shocks (in 1857 and 1866) fail to result in an overthrow of the system (Saito, 2022, p. 174). Drawing on an ecological critique of capitalism, we can also see how the expansion of polluting industries such as the fossil fuel industry might create wealth and economic growth, but that this wealth tends to concentrate in the hands of the company owners and shareholders whilst the poor disproportionately face the negative consequences. So in this case development of the forces of production serves to maintain capitalist domination rather than creating the material conditions for socialist abundance.

However, others have critiqued Saito's understanding of classical Marxism and the role of forces of production. Matt Huber steers closer to Marx's original vision by arguing that the task for socialists is to build 'a socialist movement capable of seizing the means of production' (Huber, 2023). Such a movement would then be able to further develop the forces of production, albeit in a planned way where a collective of citizens prioritises the type of development that would benefit society, free from the fetters imposed by capitalist organisation. Huber tends to associate forces of production with the expansion of technology. He cites heat pumps and nuclear reactors as technologies that would need to be rolled out on a large scale in order to limit the effects of climate breakdown (Huber, 2023). However, Huber sees the possibilities of the working class taking control of the expansion of such productive forces, precisely in order to deal with climate change. So evidently Huber does not see such an expansion as *inherently* either anti-ecological or anti-working class.

Although Saito does recognise that productive forces are not just about the development of technology, he nevertheless sometimes conflates the two. For example, he makes the rather sweeping statement that: 'Traditionally, Marxists are sympathetic to technological progress. They often proclaim that only the further development of productive forces prepares the material conditions for the post-capitalist mode of production' (Saito, 2022, p. 136). However, as mentioned above, productive forces can also include things like bringing workers together into one place. Rather than abandoning talk of productive forces entirely (or suggesting that Marx abandoned it) an alternative would be to develop an understanding of which types of developments are wholly negative (the expansion of fossil fuel use) and which types might play a negative or contradictory role in a capitalist society but could potentially be utilised in a more progressive way (for example the scientific knowledge to cure diseases is surely useful and could be more equitably distributed). Similarly, Nicolas Graham develops an account that recognises scientific knowledge as part of the forces of production. He also sees the human capacity for cooperation as an aspect of forces of production, even though it is one currently subsumed to the interests of capitalism (Graham, 2021, pp. 102–103). In this conception, there is an ecological dimension to the productive forces

as their development in a socialist society could represent an elaboration of the human capacity to labour collectively and also because humans could use our knowledge and ability to labour to try to heal the metabolic rift, enabling us to realise our capacities as a species in a way that we cannot under capitalism.

IV. THE MARX AND ENGELS RELATIONSHIP

Another of Saito's many contributions in this book is what he refers to as a re-examination of the relationship between Marx and his lifelong collaborator Friedrich Engels. Marx and Engels worked together closely from the 1840s onwards. Engels wrote the original version of what became the *Communist Manifesto*—a co-authored work. The two collaborated on political projects, for example establishing the *Neue Rheinische Zeitung* newspaper during the revolutions of 1848–1849. They regularly met and visited each other's homes to exchange ideas and comment on drafts of each other's work, especially in their later years (Hunt, 2009). Engels continued to edit and promote Marx's works after the latter's death in 1883, including preparing the second and third volume of *Capital* for publication and also publishing his own work on the origins of the family, which, according to Engels, was based on Marx's anthropological notes. That Marx and Engels collaborated is not in doubt. It is also often argued that Marx and Engels employed a division of labour between them. Marx focused on political economy in attempting to finish his masterpiece, *Capital*, whereas Engels is more known for pursuing work in a diverse range of other topics including science, military strategy, and the condition of workers' housing. Engels also took on the task of responding to and debating with contemporary critics of the Marx–Engels project.

However, the status of Engels within Marxism has been a topic of some debate amongst Marxists, especially in the 20th century. As Saito puts it, a form of 'traditional Marxism' developed and became influential in the Russian Revolution and the Soviet Union. This was 'a closed dialectical system that would enable the working class to comprehend the truth of the universe' and develop a political strategy from this knowledge (Saito, 2022, p. 45). This was a vision of Marxism as a scientific method applicable to society and nature. This totalizing interpretation of Marxism became associated with Engels and the way in which Engels promoted and explained Marxism, attempting to establish it as the scientific basis for the activities of the emerging socialist movement after Marx's death. By contrast, as Saito explains, 20th century Western Marxists who were unsympathetic to the Soviet Union sought to distance themselves from the 'traditional' interpretation of Marxism as a complete worldview. Instead, Western Marxism emphasised the aspect of human agency in Marx. However, in this they excluded or ignored the ecological and materialist element of Marx's work, which they associated with the deviations of Engels (Saito, 2022; see also Foster, 2023).

Saito revisits this ongoing debate about the Marx-Engels relationship from the point of view of their contributions to ecology. He argues that there were key and important differences in Engels' understanding of the role of ecology in Marxist political economy as compared to Marx's approach. Saito points out that rather than a strict division

of labour where scientific concerns were Engels' domain, Marx did indeed study the natural sciences and made numerous notes on his various readings, becoming at least as well informed as Engels, as we now know due to the availability of Marx's notebooks and Saito's own examination of them (Saito, 2017). As discussed above, Marx had an unfinished project of trying to integrate this ecological knowledge into his understanding of political economy. Saito supposes that 'traditional' Marxists did not want to acknowledge Marx's ecological studies partly because of the incomplete nature of Marx's thinking. They preferred to believe that Marx and Engels had bequeathed the socialist movement with a fully formed ideology rather than contemplating that Marx was still developing and changing his ideas in later life (Saito, 2022, p. 46). Ironically, the Western Marxists also downplayed Marx's interest in ecology but for very different reasons as they wished to delimit the scope of Marxism to an understanding of human societies (pp. 47–48).

Furthermore, Saito says that Engels himself did not acknowledge Marx's notebooks on the natural sciences. He finds this curious as Engels was writing on these themes. So it would have served his own interests to point out that Marx similarly recognised the importance of these topics. Saito intriguingly concludes therefore that Engels was aware that Marx had been reading and making notes on ecological matters but that 'Marx's interest in natural sciences possessed a different character to his own' (p. 51) and Engels, therefore, avoided mentioning the existence of these notebooks—even if only subconsciously.

What was this 'different character' of Marx's ecological thinking compared with that of Engels? According to Saito, Marx recognised:

> 'The danger of a serious global disruption to the interdependent process between "social metabolism" (capitalist production, circulation and consumption for the sake of profit) and the "natural metabolism" prescribed by natural law (plant growth and soil ecology). This is the problem of the second-order mediation of the universal metabolism of nature that exists *independently of human beings*' (Saito, 2022, p. 53).

In this we see Marx making use of the concept of natural metabolism, which he adapts from his reading of Liebig's work on agriculture, in order to show how the priorities of capitalism are in contradiction with 'natural laws that exist prior to capital'. Capital has its own metabolic organisation which conflicts with the processes of natural metabolism as 'the metabolism between humans and nature is modified and reorganized' under capitalist social relations (Saito, 2022, p. 58). As discussed above, this happens simultaneously with and as a consequence of the reorganisation of labour regimes in order to extract surplus value from workers.

By contrast Saito says that Engels' work on the natural sciences was quite different. Engels also took some interest in the concept of metabolism. However, Engels' project in his unpublished work *Dialectics of Nature* was aimed at discovering laws of nature. So, rather than analysing capitalism as a system with priorities that contradict the laws

of natural metabolism, Engels was more focused on demonstrating the importance of metabolism to the evolution of life from inorganic matter (Saito, 2022, p. 57). It is astounding that Engels was not just well informed about debates in evolutionary theory but able to contribute to such debates given that he was writing in the 19th century, not long after Darwin, and with little formal training in the natural sciences. However, this aside, Engels was concerned here with proving that concepts such as metabolism are universally applicable within nature, including in nature existing prior to the evolution of humans. Of course, Marx also mentioned *natural* metabolism. So, Marx implied the existence of universal natural laws independent of humans; it is these that capitalist priorities come into conflict with. But Marx's emphasis seems to have been on empirically ascertainable factors such as the loss of soil fertility, and the destructive consequences for agriculture under capitalism as a specific way of organizing socio-natural relations (Saito, 2022, p. 59). Importantly, Marx used the concept of metabolism to integrate political economy and ecology, whereas Engels' work was apparently 'characterised by a philosophical and transhistorical scheme' (p. 67) and appears more about uncovering abstract principles applicable to the natural world as a somewhat separate project from discussions of political economy.

Saito notes that the distinctions between Marx's and Engels' understandings are often subtle. However, they are politically important. Engels tended to stress the utility of understanding the transhistorical laws of nature so that humans might appropriately make use of such laws, in other words, controlling nature in order to satisfy human needs. However, if the laws of nature are misunderstood or ignored then nature might take 'revenge'. For example, a civilisation's overuse of timber from forests could lead to desertification which might cause it to collapse. However, according to Saito, Marx did not see capitalism's degradation of the natural world merely in terms of revenge of nature (p. 59). Rather, Marx recognised that capital is also astonishingly 'elastic' in its ability to overcome what seem to be natural limits—although this creates new and different contradictions. Indeed, we know now that the 19th century soil fertility crisis recognised by Marx was mitigated by the development of artificial fertilisers in the 20th century but that these brought their own ecological problems such as the eutrophication of freshwater. We might also think of the need to extract minerals such as lithium to produce electric vehicles, opening up new frontiers of extraction in order to try to solve the problem of climate change. Furthermore, Marx emphasised the human capacity to organise and resist attacks on our wellbeing—for example, by struggling over shorter working hours—which also have ecological dimensions. So, we should avoid apocalyptic warnings of a future societal collapse associated with the revenge of nature and instead try to understand the ways in which different forms of society reshape their relationships with the natural world and the role of human activity in changing this (Saito, 2022, pp. 59–61).

Saito undertakes a careful reading of Marx's and Engels' respective works, including unpublished Marx notebooks and examples of the changes to *Capital* introduced by Engels' editing, to point to distinctions between Marx and Engels. In this, Saito departs

slightly from his associates in the metabolic rift school, many of whom have defended the centrality of Engels to Marxist ecological thought and downplayed supposed differences. For example, Foster has recently criticised this part of Saito's book. Saito bases part of his argument on an edit to *Capital* whereby Engels had removed a mention of 'natural metabolism' from a passage of Marx, therefore apparently downplaying or even covering up part of Marx's ecological critique of capitalism (Saito, 2022, p. 54). However, Foster does not see this as particularly significant because Engels did retain the term 'natural metabolism' at other points in the text. Furthermore, Foster argues that Engels' comments about nature's revenge are in fact compatible with an understanding of metabolic rift; both point to the possibility of ecological crisis as capitalism undermines its own natural basis (Foster, 2023).

Furthermore, I find it curious that Saito bases his account so much on Engels' later works. In his other writings, especially *The Condition of the Working Class in England* (Engels, 1845), Engels makes several references to the ecological conditions of working-class life in urban areas. He shows how pollution and waste created a disgusting and dangerous living environment for workers both in their homes and in the workplace. For example, the streets of London are 'rough, dirty, filled with vegetable and animal refuse, without sewers or gutters, but supplied with foul, stagnant pools instead' (Engels, 1845, p. 71). These themes are continued in later works by Engels such as his pamphlet on *The Housing Question* (1872) where he returns to themes of insanitary living conditions and the spread of infectious diseases. We can find in Engels' work the beginnings of an urban political ecology. Engels' approach here recognises that human activity has made dramatic changes to the natural environment that could be understood in terms of a metabolic rift; he shows how such modification in the relationship between humans and the natural environment has also impacted on human lives, especially by damaging their chances of living healthy lives. Engels also shows, with increasing sophistication as he learns from the emerging germ theories of disease transmission, how the conditions of the working class enable the spread of infectious diseases (Royle, 2021a). This last point could indeed be understood in terms of a 'revenge of nature'. However, it is 'revenge' for the way in which capitalist demands for profit have been put before the health needs of the working class rather than for a civilization's lack of comprehension of the laws of nature. Importantly, Engels' more ecological work does demonstrate an attempt to integrate an understanding of political economy with ecology and to address the ecological implications of different ways of organizing society in an empirical manner as Marx does by examining robbery agriculture. Engels would surely have agreed with Marx that the working class could resist their ecological conditions. Therefore, I do not think it is fair to imply that Engels' ecology can be reduced 'merely' to comments about controlling nature or nature's revenge.

V. MARX AS A DEGROWTH THINKER?

Saito argues that Marx became increasingly concerned with how the priorities of a capitalist society might lead it to come into contradiction with natural metabolism,

concluding that Marx became a 'degrowth communist' in later life. Marx would not have used the term degrowth. However, it is a way of thinking that has become influential on the radical left and amongst activists. For many, it seems intuitively obvious that we cannot have exponential economic growth on a finite planet; for example, Thunberg has appealed to the United Nations to give up growth: 'We are in the beginning of a mass extinction, and all you can talk about is money and fairy tales of eternal economic growth' (quoted in Cassidy, 2020). Nevertheless, the assertion that Marx was a degrowth communist will undoubtedly contribute to a heated debate on the ecological left. For example, Huber, putting forward a different understanding of ecological Marxism, has described degrowth as a 'kind of austerity' (Huber, 2023). Huber suggests that it will appeal more to middle class visions of environmentalism due to its focus on the distribution of commodities rather than what happens in the realm of production where workers might organise (Huber, 2022, p. 32).

There are variants of the concept of degrowth. However, in general what motivates degrowthers is the need to reduce the throughput of energy and materials through the economy; 'Degrowth is a planned reduction of energy and resource throughput designed to bring the economy back into balance with the living world in a way that reduces inequality and improves human well-being' (Hickel, 2021, p. 1106). This represents a recognition that society cannot go on increasing its energy and resource use and expect to avoid further catastrophic climate change or to stay within other 'planetary boundaries'. Demands for degrowth go against the priorities of all mainstream economic thinking. In Britain, both the Labour and Conservative Parties and the leaders of most trade unions call for more economic growth, although they might differ in their rhetoric. So degrowth is a radical concept; incompatible with the continuation of the capitalist status quo. And many have argued, like Saito does, that degrowth and socialism have a lot in common (see Löwy, 2023). Degrowth is often therefore contrasted with a vision of 'green growth', where capitalism continues in much the same way, but technology is used to try to make it less environmentally damaging and forms a new site of profit seeking (Schmelzer *et al.*, 2022, pp. 5–6)—think of Elon Musk's electric car gigafactories as an extreme example.

Economic growth tends to be associated with GDP (gross domestic product - ie the market value of all the goods and services traded within a nation in a given time period). So, it might be assumed that degrowth aims at a reduction in GDP growth. However, degrowth 'is not about reducing GDP' (Hickel, 2021, p. 1106). Indeed, advocates of degrowth recognise that the focus on GDP itself obscures the underlying commodification of materials and energy. GDP appears to be immaterial but the reason that states pursue increasing levels of GDP is so they can spend more on more stuff which would mean increased levels of energy and material throughput. As heterodox economists have often pointed out, GDP is a poor measure of how well that society is doing. If there is an increase in car accidents, this will increase GDP if it leads to more people being employed to do the repairs (Schmelzer *et al.*, 2022, p. 41). If we accept the arguments of degrowth thinkers, it is impossible to 'decouple'

GDP growth from damages to the environment, as advocates of 'green growth' would like to believe (Hickel, 2020, pp. 149–153). So even though GDP is not the focus of degrowth, one likely consequence of degrowth policies would be a reduction in GDP growth or even in GDP itself.

Discussions of degrowth often start with ecological breakdown. However, degrowth is also meant to improve human wellbeing. It is often aligned with alternative strategies for living such as guaranteed incomes which might go alongside a planned reduction in working hours and a generally more rational approach to working lives. Saito agrees with contemporary degrowth theorists that a typical working week could be reduced to around 15–25 hours and suggests that dirty or boring jobs, if they cannot be eliminated, could be shared out evenly amongst the population (Saito, 2022, pp. 239–240). Perhaps we all take turns cleaning the toilets. Society could dispense with what David Graeber referred to as 'bullshit jobs' which produce nothing useful and where workers themselves recognise that what they are doing is largely meaningless apart from the fact that it provides profit for someone. Critics of degrowth have pointed out that there are parts of the economy that we would want to see more investment in, not less. But most degrowth thinkers agree that there are some areas of the economy that could be allowed to grow, such as the social care sector for example—with relatively low greenhouse gas emissions (see Hickel, 2020, p. 186). Some also suggest that countries in the Global South could grow and develop—for example, leading degrowth advocate Jason Hickel has said that if justice for the Global South 'requires or entails economic growth, then so be it' (2020, p. 189). However, there is not a clear consensus on what 'development' might look like. Should degrowth be limited to the Global North to make space for growth in the South? Or is there a need for a different, post-development vision of a good life for the majority of the world's population (see Escobar, 2015; Spash, 2020)?

The final chapters of Saito's book, where he outlines Marx's 'degrowth communism' touch on some of these themes. This part of the book includes an especially interesting section on Marx's appreciation for alternative forms of societal organisation in non-Western societies. For example, Marx studied, inter alia, the Russian peasant communes known as mir or *obshchina*. Saito suggests that in such rural communes, labour was carried out collectively and the products of labour were distributed equally (Saito, 2022, p. 194). Through studying these formations and engaging in debates with Russian intellectuals, for example in a well-known correspondence with the Russian activist Vera Zasulich, Marx apparently recognised that communal society was superior to capitalism. Such societies could leap directly to socialism rather than passing through an intermediate damaging capitalist stage. Therefore, Marx dispensed with his earlier understanding of progressive historical development. He also discarded his earlier Eurocentrism—involving measuring all non-European societies against a European ideal, acknowledging not only that there is variation amongst non-European social forms that needs to be analysed concretely but also by coming to argue that a revolution in Russia could actually inspire struggles in the West rather than representing a form of development that trails behind the West (Saito, 2022, p. 196).

These points have made Saito's book attractive in developing the kind of anti-racist and anti-imperialist ecological Marxism that might appeal to climate justice protestors. This also further underlines an apparent distinction between Marx and Engels. As discussed above, Engels' writings imply that a future socialist society could achieve mastery of nature through its expanded scientific knowledge, but if pre-capitalist societies also adopted sustainable practices, they did not necessarily need access to this same knowledge (Saito, 2022, p. 65).

However, there is relatively little in Saito's book that responds directly to more contemporary debates about degrowth. Indeed, there is an inevitable difficulty in trying to graft Marx's vision of a future society onto the contemporary term 'degrowth'. As Schmelzer *et al.* (2022) point out, degrowth thinking also tends to involve a critique of the *ideology* of growth. From the early 1950s onwards, states around the world started to view economic growth as their primary goal. This built on an earlier shift in understanding during the 1930s and 1940s in the common understanding of economics whereby policy makers and the public began to understand 'the economy' as a 'self-contained totality where flows of money regulate the relationships between the production, distribution and consumption of goods and services within nationally organised borders' (p. 40). Achieving economic growth was the goal for both the West and the Soviet Union and both offered economic growth to potential allies in the Global South in an era of decolonisation. Marx, writing in the 19th century, could not have predicted or understood how growth as an ideology would become hegemonic in this way. So, although his later works do highlight the irrationality of capitalism's treatment of the natural world and express a desire for a more rational way of regulating humanity's metabolic interactions with nature, this is not the same as calling for 'degrowth' as it is *currently usually understood*.

This may seem like an obvious critique. But it points to a key difference between a classical Marxist critique of capitalism and degrowth. For Marx it is not growth as such that is the problem. The root of capitalism's unsustainable relationship to nature is the drive of capitalists to accumulate profit by employing the labour power of workers and exploiting them. Growth in terms of material throughput of resources is a *consequence* of this need on the part of capitalists to realise ever greater profits, but not its cause. John Bellamy Foster, a Marxist sympathetic to degrowth, expressed this distinction well in a discussion of degrowth a decade ago: 'The ecological struggle . . . must aim *not merely for degrowth in the abstract* but more concretely for deaccumulation—a transition away from a system geared to the accumulation of capital without end' (Foster, 2011). Somewhat similarly, economist Clive Spash critiques degrowth for not being radical enough in stepping away from the conceptual underpinnings of mainstream economic thinking. For example, when some thinkers associated with the degrowth movement advocate for the—constrained—operation of capitalist markets, they fail to recognise that this will necessarily entail growth. The whole point of markets from the point of view of the capitalist is to realise a return on investment. There is no steady-state market capitalism (Spash, 2020, p. 9).

VI. CONCLUSIONS

Saito's book is remarkable and rich in detail. There is a consistent line of overall argument throughout so that in writing this review, it is difficult to discuss just one part of it. Each point that Saito makes builds on concepts discussed elsewhere in the book that also need to be addressed to understand the overall direction of his thinking. For example, the discussion of the Marx and Engels relationship is not just of historical or biographical interest but highlights a key point about Marx's project of integrating notions of metabolism into his critique of political economy and how this may have been overlooked by 'traditional' Marxists. If we accept Saito's argument that Engels was more concerned with understanding and controlling the laws of nature in order to meet human needs, we can see how this might have informed the strand of traditional Marxism, with its emphasis on industrialisation, that Saito finds so problematic. Through the discussion of the Marx and Engels relationship Saito shows how the concept of metabolism can deepen our understanding and inform the kind of ecological critique of capitalism he would want to see become more influential today.

Saito's points about degrowth may provoke the most discussion. The degrowthers are formally correct to say that society cannot continue to expand the use of fossil fuels without causing more catastrophic climate change. Their discussions of how we could all have a shorter working week and a better quality of life are obviously very attractive. But Saito goes further than this and asserts the existence of more general limits to growth. According to Saito, there are 'planetary boundaries that exist independently of human will' (2022, p. 229). These constrain socialism's ability to make material abundance 'almost infinite' so that 'the working class can enjoy the same luxurious life without natural limits' (p. 229). This review has primarily discussed Saito's work in relation to theories of metabolism as Saito himself maintains that metabolism is central to an ecological Marxist understanding (2022, p. 19). However, his book poses a challenge to the metabolic rift school of Marxists associated with the term. In some ways it is more reminiscent of the likes of Ted Benton with its emphasis on rethinking the suppositions of traditional Marxism and on highlighting irreconcilable contradictions between the demands of capitalism and the limits posed by the natural world (Saito references Benton's 'natural limits' article briefly and approvingly on p. 15—the difference between them is that Benton thinks that Marx never recognised natural limits whereas Saito says he eventually did later in life).

Saito makes use of Marx's communism and ecological thought to engage in a debate about what a future socialist or 'post-capitalist' society might look like. 'A revival of Marx's ecological vision of post-capitalism aims to enrich the discursive constellation around the Anthropocene, connecting this new geological concept to the contemporary issues of political economy, democracy and justice beyond the Earth sciences' (p. 4). Marxists have often been much better at identifying the problems than putting forwards proposals for what could come after capitalism. But Saito points out that Marx and Engels debated with the Utopian thinkers of the 19th century who came up with imaginative ideas of the type of world they wanted to see. Saito values

utopianism for its ability to propose radical alternatives, rather than naturalising some of the elements of the present capitalist society (p. 137).

However, this glosses over the Marxist *critique* of utopian socialism. In his famous pamphlet, *Socialism: Utopian and Scientific* (1880), Engels contrasted utopianism with dialectics and historical materialism. Here, Engels re-emphasises his and Marx's earlier understanding of how the development of forces of production comes to contradict with capitalist relations of production. This creates the conditions—including by drawing workers together and encouraging them to cooperate—under which the proletariat can seize political power, ultimately laying the basis for the emergence of a type of society without class distinctions. Crucially, this would come about due to the economic conditions created by capitalism, not by 'the mere willingness to abolish these classes' on the part of Utopian socialists, however much they recognise the injustices of the existing society. As this pamphlet is a work by the mature Engels it is hardly surprising that it doesn't interest Saito. However, although we might criticise some of Engels' formulations, his way of thinking still has some use in present day discussions amongst socialists.

Where degrowth has tended to be weakest is in putting forward a strategy to get from our capitalist society to one based on the principles of degrowth communism. By contrast the strength of someone like Matt Huber's approach is that he shows how the working class might organise in the here and now, putting forward practical examples of how ecological issues are implicated in ongoing trade union struggles (Huber, 2022, especially chapter 7; see also Empson & Gibson, 2023 for a very useful review of Saito on class struggle). There is no obvious way out of the impasse created by this debate between ecological Marxists, and I find myself not entirely in agreement with Huber either—especially with his emphasis on technologies including nuclear power. However, it does seem entirely possible to understand the objective *conditions* created by capitalist development for class struggle without falling into the trap of suggesting that development is linear, that socialist revolution is inevitable or that workers will only fight back when faced with economic crisis. Marx, with a dialectical method rooted in Hegelian philosophy, was concerned with demonstrating how capitalism is a dynamic and contradictory system. If we dispense with the element of contradiction between forces and relations of production, we neglect one important way of understanding how the system operates and why it is so prone to crisis.

Despite these reservations about some of the ways Saito characterises 'traditional Marxism' in order to build his counter-argument, I found this book to be an incredibly valuable intervention in discussions of socialism and ecological breakdown and I am sure I will continue to return to its many pertinent arguments. The book does a huge service in critiquing the idea that Marx was anti-ecological and Eurocentric in his outlook. Saito dispenses with the idea of the linear progress from feudalism to capitalism to socialism sometimes ascribed to Marxists. This is a real strength as Marxists have often had to argue against assumptions that Marxism is deterministic. So, the picture painted by Saito of a more mature Marx who recognised the need to think creatively about how a future society would exist in relation with its natural

environment is a welcome one. It is also refreshing to see a real engagement with the ways in which Marx's (and Engels') ideas developed during their lives. It would be unhelpful to present day socialists to take everything they ever wrote as gospel.

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