

68. The Capitalocene response to the Anthropocene

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INTRODUCTION

Farming and eating are both social and natural, connecting soils, water, body, labour power, capital (sometimes), culture, hunger, identity, plants, pests, animals, photosynthesis, agricultural knowledge, science (sometimes), seeds, power and so on. Scientists, intellectuals, policy-makers and activists are searching for concepts through which to understand changing dynamics in farming and eating practices, or more generally, agrarian change, thereby crossing disciplinary boundaries between the natural and social sciences. Contemporary awareness of environmental crises seems an important driving force behind this search. This chapter reviews two of those concepts – the Anthropocene and the Capitalocene – and the debate around and between them. One unresolved and hotly debated issue is how to interpret the linkages between, or the totality of, nature and society, or for critical agrarian studies, nature and capitalism. Divergent views exist as to whether it should be termed capitalism *and* nature, nature-capitalism or nature-*in*-capitalism/capitalism-*in*-nature. This chapter works on the premise that critical agrarian studies, one way or another, has to include nature in its core theoretical framework. The discussion around Jason Moore's (2015) book *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* is used here as a platform to stimulate such theoretical engagement. This discussion partly evolves around whether to think in terms of *in*, *and* or *-*. A closer look reveals that this semantic strife is based upon quite some different views as to how to conceptualize nature and society (or *in* or *-*) in the field of critical agrarian studies, on what capitalism is and on how to approach human action.

FROM ANTHROPOCENE TO CAPITALOCENE

With the declaration of mankind as an environmental or geophysical force, Crutzen (2002) inaugurated the concept of the Anthropocene almost two decades ago. Since then, the Anthropocene became a signifier for a new interval of geological time (Ellis et al. 2016; Fremaux and Barry 2018). Though scientists have not yet definitively decided when exactly the Anthropocene began (Ellis et al. 2016; Waters et al. 2016), most trace its origins to the latter part of the eighteenth century, when analyses showed a growing global concentration of carbon dioxide and methane. This coincides with James Watt's design of the steam engine in 1784. Industrialization and expansion in the use of fossil fuels mark the early Anthropocene (Steffen et al. 2007; Trischler 2016). The most recent period in the Anthropocene is referred to as the Great Acceleration (Steffen et al. 2015) and refers to the post-1945 increase of population and the economy, resulting in an explosive growth of fossil energy consumption. Since then, scientists identify a set of converging earth system and socio-economic trends,

including, among others, sharp rises in emissions of greenhouse gases, stratospheric ozone, ocean acidification and tropical forest loss as earth system trends, and rising population, gross domestic product, water use, transportation and agrochemical consumption as socio-economic trends (Bai et al. 2016).

In the Anthropocene discourse, the accumulation of knowledge and technical innovation are considered important drivers of humankind as an environmental force. However, in this same discourse, the growing awareness of the apocalyptic dimensions of human impact on the environment may turn technological ingenuity from a force of destruction into a force of salvation. Through its ability to articulate alternative science–practice relationships and integrate various perspectives the upcoming crisis may be averted (Bai et al. 2016; Steffen et al. 2015). This salvation takes place through three interventions, namely (1) mitigation, (2) adaptation and (3) geo-engineering. While mitigation has to realize a decarbonization of our energy systems, adaptation measures aim at reducing the negative consequences, and geo-engineering at offsetting the impact, of humankind on climate change (Brasseur and Granier 2013). Thus, although the Anthropocene discourse identified humankind historically as an environmental force of a destructive kind, the same Anthropocene discourse also produced a future-oriented technological optimism. Through technological intervention the spectre of an apocalypse might be averted.

While several authors have argued that climate change is universal and a threat to humanity as a whole (Crutzen 2002; Chakrabarty 2009), others have pointed out that elevating the frame of analysis to humanity as a whole erases the political history of climate change (McEwan 2018) and obscures how global capitalism continues to produce differentiated vulnerabilities (Malm and Hornborg 2014). In *Capitalism in the Web of Life* (2015), the environmental historian and historical geographer Jason Moore builds on this idea that it was not a unitary subject named humankind that brought the world to the brink of collapse, but capitalism. Moore argues that the Anthropocene is not only one of the most important, but also one of the most dangerous, concepts of our time, because when highlighting the pressing nature of climate change it mystifies the relational context in which this potential catastrophe has been produced. The Anthropocene argument has become an easy, not to say easy-going, story, because it does not consider the relations of production and inequality inscribed in our production system. Moore thus argues that the Anthropocene is a quasi-empty signifier and therefore comfortably fits neo-Malthusian arguments on the relationships between fossil fuels, population pressures and the environment (ibid.).

Moore not only delivers a critique of the Anthropocene, but, importantly, offers a new perspective to understand the current environmental crisis through the development of a nature-centred approach to capital accumulation. Fundamental to his analysis is a critique of what Moore refers to as Cartesian dualism, or Green Arithmetic; namely, the distinction between nature and society (ibid., 1–2, 78–81). This distinction, Moore argues, is capitalism's organizing principle (Patel and Moore 2017, 51). The invention of nature as a distinct and separate entity, its setting apart, is functional to capital's domination and exploitation of nature, which is at the foundation of the environmental crisis. The possibility to understand and move beyond the current environmental crisis is dependent on our ability to make an analytical shift from humans and environment to environment-making: 'the ever-changing, interpenetrating, and interchanging dialectic of humans and environments in historical change' (Moore 2015, 45). The environmental crisis is thus at the same time a crisis of capitalism. This brings us to his key proposition: namely, that capitalism does not *have* an ecological regime, but capitalism

is an ecological regime. Moore understands the idea of capitalism as a World-Ecology and the environmental crisis as a crisis of capitalism by using the concept of 'double internality' (ibid., 1). The notion of double internality holds that capitalism is part of nature and nature part of capitalism. Moore refers to capitalism in nature/nature in capitalism as a relational approach, emphasizing the unity of capitalism and nature. The current environmental crisis, therefore, can only be overcome through an overcoming of capitalism.

Crucial to the understanding of capitalism as a World-Ecology working toward its own destruction is the relationship between Marx's 'law of value' and Moore's 'law of Cheap Nature'. Following Marx, Moore defines a 'law' as a 'durable pattern of power and production' and 'value' as abstract social labour determined by socially necessary labour time (ibid., 52). However, Moore argues, in order for capital to accumulate it ceaselessly searches for and is in need of 'a rising stream of low-cost food, labour power, energy, and raw materials for the factory gates' to reduce socially necessary labour time. He calls these the Four Cheaps. So nature, Moore argues, is at the foundation of the production of value in capitalism. Therefore, the law of value in capitalism is simultaneously a law of 'Cheap Nature' (ibid., 53) and value is not only produced in a social relation but co-produced by 'human bundled with the rest of nature' (ibid., 63).

How does this create the contemporary environmental crisis? Moore explains this crisis referring to a dialectic between two processes: capitalization and appropriation (ibid., 292). He defines capitalization as the reduction of socially necessary labour time through commodification, while appropriation he defines as the maximization of unpaid work in the service of capitalization (ibid., 300). Elsewhere, he defines these two processes as the exploitation of labour power in commodity production and the appropriation of nature's life-making capacities (ibid., 95). Capital needs a balance between capitalization (or exploitation) and appropriation (ibid., 292), and an increased capitalization is dependent on new forms of appropriation. The accumulation regime of capitalism, Moore argues, is dependent on the dialectic between productivity and plunder. So, in order to sustain exploitation, defined as the production of surplus-value, capital needs the appropriation of Cheap Nature. This demand for Cheap Nature results in an obsessive search to turn the biosphere into capital, driving geographical expansion and creating new frontiers through which new Cheap Nature can be produced.¹ Moore then suggests 'that capitalism has entered an era of epochal crisis' (ibid., 298) as the options to find new frontiers have been reduced.

CONTRASTING POSITIONS

In the following we identify three types of contrasting views: (1) following from the previous section, Moore's critique on the Anthropocene; (2) the differences between the Capitalocene or World-Ecology approach and ecological Marxism, mainly by reviewing a discussion between Jason Moore and John Bellamy Foster; and (3) some other criticisms raised concerning Moore's *Capitalism in the Web of Life* (2015).

Moore raises three interrelated objections to the concept of the Anthropocene. Firstly, the idea of humanity as an undifferentiated whole, 'a homogeneous acting unit' working on nature, removes inequality, commodification, imperialism, patriarchy, racial formations and so on from consideration (ibid., 170). The notion of the Capitalocene, instead of unduly prioritizing environmental consequences and its proximate drivers (industrialization, urbanization, rising

population), proposes a methodological shift by incorporating capital and imperialism and producer/product relations (ibid., 172) in any explanation. Secondly, while the Anthropocene concept suggests that historical change is simply driven by technology-resource complexes and population (as perceived from a neo-Malthusian perspective), the concept of the Capitalocene approaches modern history differently, with capitalism as a way of organizing nature. The issue of population, for example, is seen by Moore as the ‘modern world-system’s patterns of family formation and population movement’ (ibid., 171) that are part of the capitalist mode of production. What Moore considers absent from the Anthropocene is a relational conception of *technics*. His notion of technics stands in contrast to an isolated technology. A capitalist technics is specific ‘crystallizations of tools and ideas, power and nature, to appropriate the wealth of uncommodified nature in service to advancing labor productivity’ (ibid., 59). Thirdly, for Moore these conceptual and methodological problems stem from Cartesian dualism.

According to Moore, Cartesian dualism is not only the problem of the Anthropocene and mainstream environmentalism but also of the ecological Marxist approaches that he is criticizing, or is at least ambivalent. This is visible in the difference in approach of Moore and thinkers like John Bellamy Foster. Moore criticizes ecological Marxism for embracing philosophically and discursively a relational ontology (humanity-in-nature) in a very superficial form only, while accepting practically and analytically, a nature/society dualism (humanity *and* nature). Foster’s concept of *metabolic rift* signifies a hard distinction between nature and society, Moore argues, by conceptualizing the rift as ‘a disruption in the exchange between social systems and natural systems’ (ibid., 77). In other words, ‘social systems *disrupt* natural systems’ (ibid., 77) and ‘capitalism acts upon nature’ (ibid., 43). Moore considers this very different from his concepts of double internality, *oikeios* and the web of life. Instead of lamenting humanity’s separation *from* nature, he emphasizes humanity’s place *within* the web of life, which offers ‘the possibility of discerning the conditions of capitalist renewal (if any) and crisis in the twenty-first century’ (ibid., 78). For Moore it is capitalism-in-nature/nature-in-capitalism; he insists upon substituting *in-* for *and*. He substantiates this argument about a singular metabolism with a reference to Marx, who, Moore argues, referred to the interdependent processes of social metabolism, and not to the metabolism between the two entities nature and society (ibid., 75).

In contrast, Foster considers it unjustified that Moore sets aside thinkers and ideas he disagrees with by referring to Cartesian dualism (in Foster and Angus 2016; see also Watson et al. 2016). Foster also disagrees with Moore’s representation of Marx’s interpretation of dialectics and argues that Marx’s dialectics are a process that both separates *and* unites individuals and society, humanity and nature, parts and wholes (for similar arguments, see also Watson et al. 2016). This is a form of dialectical thinking that allows one to analyse

the *separation* of humanity and nature, on the degradation of natural processes and life, because that is the concrete reality of society, life and nature under the current alienated system of production, capitalism ... There is no contradiction in seeing society as both separate from and irreducible to the Earth system as a whole, and simultaneously as a fundamental part of it. (Foster and Angus 2016)

Marx starts from the unity of living and active humanity with nature but states that this requires little explanation. Instead, what requires explanation is the *separation* between the ‘inorganic conditions of human existence and this active existence, a separation which is completely posited only in the relation of wage labour and capital’ (Marx in *Grundrisse* as cited by Foster). Foster’s ecological Marxism acknowledges the possibility of distinguishing different forms of

ecological crisis, some of which already existed in the past and only intensified under capitalism. Furthermore, 'economic crises and ecological crises do not necessarily determine each other', whereas for Moore there is only a singular crisis of 'capitalism as a way of organizing nature' (Moore 2015, 198). For Foster it is important to analyse what capitalism *does* to nature rather than how nature *works* for capital as in the monist view of Moore.² In Moore's monist view, which he refers to using the term 'singular metabolism', capital and nature 'cannot be separated even by abstraction' (Foster and Angus 2016). Foster turns this into the political argument that Moore 'eliminates the very possibility for an ecological critique of capitalism'. By reducing capitalism and nature to one substance (let us call it naturecapitalism or capitalismnature), the contradictions between capitalism and nature are dissolved. Foster expresses concern about Moore attacking 'the Green movement and ecological Marxists wholesale as apocalyptic dualists for being concerned about the growing rifts in the planetary boundaries of the Earth System' and excluding the perspectives of ecological movements. While Moore expects a transition of capitalism in the near future since the end of Cheap Nature is coming – the world-ecological limit of capital is capital itself, now facing an 'epochal crisis' – Foster emphasizes the political project of socialism as the source for change.

Besides the Anthropocene-Capitalocene dichotomy and the differences between Moore and Foster a third set of disagreements between thinkers exists. Firstly, Moore argues that capitalism started in the long sixteenth century (1451–1648) as a consequence of the transition from land to labour productivity, the globalizing character of creating and appropriating cheap nature and cheap labour (the Great Frontier) and, as a condition for this expansion, the identification, mapping, measuring, quantification and coding of human and extra-human natures (a process labelled as 'abstract social nature' by Moore). Hence, in his view capitalism did not start with the expansion of wage labour in factory production in the nineteenth century, building on a longer process of manufacturing in the preceding centuries. In one stroke Moore rejects here both the Anthropocene view of history as well as Marxist positions that take the typical capital(-free) labour relationship as the central notion and driving force of capitalism. The latter puts class, production and the political discourse used to legitimize exploitation (as produced in the modern state) as central to capitalism, rather than the world system, appropriation at the frontier and global trade.

Secondly, Nayeri (2016) discusses Moore's emphasis on capitalism as 'a way of organizing nature', which means that Moore focuses 'attention on what is shared with all other modes of production, the exact opposite of Marx's method that focuses attention on what is unique to capitalist production'. Nayeri argues that since humans started to practice agriculture, they have been controlling and dominating nature, and appropriating it. This raises the question: what then is unique to capitalism in its relation with nature? We consider that Nayeri has a point about Moore's focus, but also that Moore contains at least a partial answer to this question, namely the 'annihilation of space by time' (Moore 2015, 61) in capitalism; that is, the time-discipline on all production with labour productivity as both a metric of wealth and being required for competitiveness. This expanding system transforms all life and space. In short, it is not so much the appropriation of nature but the speed of it, resulting from the 'whip of competition' (ibid., 231), that could be seen as specific for capitalism. For critical agrarian studies the implication is that historically there may be more of a continuity as humans appropriate nature than an absolute break resulting from capitalism.³ It is the pace and scale of appropriation that has changed over time.

Thirdly, a relevant question is how much detailed knowledge of nature should be developed to analyse capitalism *in/and/-*nature. Ted Benton (in Watson et al. 2016, 108) finds in the web of life little acknowledgement that there is any such thing as natural mechanisms, natural substances, processes, causal mechanisms and so on that exist independently of their being bound together with human economic practices. This is not strange given Moore's condemnation of dualism. Benton argues that this makes it impossible to analyse what human social practice, possibly unintentional and unforeseen, such as climate change, may disrupt. Benton's position requires a concept of 'asymmetry, that persistent externality of large aspects of the whole complex that you can use the word nature to refer to, that you have to have in your metaphysics if you're going to understand how ecological crisis occurs' (Benton in Watson et al. 2016, 109). Benton makes the point that a rejection of dualism should not hinder us in making distinctions; an argument that seems in line with Foster's critique of Moore's representation of dialectics (see also Benton 1991). Making distinctions does not throw away relational thinking, such as the relation between labour and capital, or between the properties of phosphate and how the amount of applied phosphate fertilizer is regulated in environmental law. To talk about relations without distinct, possibly asymmetric, elements is probably impossible.

LOOKING FORWARD

Although this chapter has little space to develop a comprehensive guide to critical agrarian studies, we need as a minimal point of reference an outline of the kind of research for which the World-Ecology approach is relevant. After outlining that point of reference, we synthesize the contribution of Moore and present several directions to overcome some of the limitations of his World-Ecology approach.

The origin of critical agrarian studies lies in peasant studies, agrarian political economy and debates about social change and social struggles in rural societies. 'Critical' in this sense could mean 'critical of social practices it studies as well as of other theories' and realizing that social science 'has an emancipatory potential' (Sayer 2000, 18). Critical studies contrast with approaches that take the totality and historical specificity of society as given, and the necessity to comply to its logic (Horkheimer 1972). On the one hand, critical approaches aim to develop alternative ways of being in the world and of knowing from everyday life experiences (Lefebvre 1991); on the other hand, they identify when and where ways of knowing hide or falsely represent oppressive relationships. Critical thus refers to a gamut of meanings: that social science has an emancipatory potential; that it can reveal implicit and misleading assumptions about the world; and that it has the potential to be self-reflexive about science (and knowledge in general). Critical in critical agrarian studies also refers to its contribution to a critique of political economy, a normative critique of the consequences of capitalism and a refusal to take capitalism as a naturally given fact of life. A second important element of contemporary critical agrarian studies, developed over the last few decades in particular, are its efforts to find new ways of conceptualizing intersections between class relationships and other social relationships, tensions, contradictions and forms of power such as gender, ethnicity and identity. A third development, though far from being turned into a consensus, concerns proposals for less deterministic approaches that lean towards practice, looking at ruptures and resistance, hegemony and autonomy.

The World-Ecology approach is certainly a form of critique of political economy and Moore's *Capitalism in the Web of Life* contributes several important notions to critical agrarian studies. The notion of the Capitalocene is interesting as it emphasizes that we are living in an historical era which privileges the endless accumulation of capital. This accumulation of capital is not to be seen as independent from its effects on nature but as a process of interacting with nature.⁴ Capitalism has thrived on the appropriation of unpaid labour and cheap nature. Capitalism searches and benefits from new frontiers,⁵ leading to a 'ceaseless transformation of the earth in the endless accumulation of capital – and vice versa' (Moore 2015, 34). Another notion with methodological significance is how such transformation of the earth and economic development in different parts of the world are becoming connected over time; for example, cheap grain from Poland and cheap timber from Norway, paid for with silver from the Andes, for the growth of the economy in the Dutch Republic in the sixteenth century. Moore thus proposes to study how capital accumulation in one place may 'stand on' exploitation, environmental degradation and the appropriation of unpaid labour and nature elsewhere. While this insight is not new, Moore consistently argues the need to look at these as integrated connections, as one totality.⁶ Such connections have been revealed in historical studies of commodity chains or in food regime theory, but could be more present in the numerous case studies offered by critical agrarian studies. Thirdly, Moore (2015, 9) invites us to look at human history as a co-produced history 'through which humans put nature to work – including other humans – in accumulating wealth and power'. Co-production is not a new insight for those familiar with technology studies, but Moore stretches our minds by arguing that putting nature to work is not simply connected to capitalism but that it *is* capitalism. Putting nature to work *is* the accumulation of wealth and power; it is the interlocked history of capital, empire (power) and science in the modern world.

Having said that, in its drive to picture nature in capitalism as one totality, it might be asked: how much does World-Ecology thinking contribute to the aim of critical agrarian studies in understanding agrarian *change*? In the web of life, *change* in capitalism is basically capitalism's expansion (the appropriation of Cheap Nature plus labour exploitation). As discussed above, the singular metabolism and rejection of the distinction between nature and society (implied in Moore's rejection of dualism and his particular use of the term 'dialectics') is at the core of Foster's critique. For the claim that his idea of a 'double internality' re-establishes Marx's non-dualistic approach of nature-society interdependences, Moore (2015, 10–11) mobilizes Lefebvre, known for his rejection of Cartesian dualism (Lefebvre 1991, 1). However, both Marx and Lefebvre would probably require the study of internal contradictions, divergent class interests and social struggle, to a far greater degree than what we find in Moore's analysis, which presents an almost smooth development of the law of value. There is no contradiction between thinking of society as a totality and understanding such totality as composed of interacting parts (Lefebvre 1991, 33; Merrifield 1993, 517–519). Change occurs not as a natural law (or as capitalism's law) but as an outcome of multiple social and natural processes (with different crisis and counter-crisis tendencies). Moore (2015, 4) instead, however, offers us a monist view: 'The crisis today is therefore not multiple but singular and manifold'.⁷ Moore's singular monism, with capitalization and appropriation as the pivotal elements, seems to have but one direction: the approaching ending of the frontier (the 'epochal crisis') as the moment of change.

This relates to a second shortcoming: an insufficient recognition of the shaping of society by social struggle, of which class conflict is one, but not the only, form. Foster and Angus (2016)

already noticed that Moore attacks the thinking of radical ecological movements, when he argues that ‘many Greens, unduly focused on what capitalism *does to* nature (the degradation question)’ ignore ‘how nature *works for* capitalism (the work/energy question)’ (Moore 2015, 280). Green thought provokes changes in how humans interact with nature and it is therefore relevant to study its multiple reformist, progressive and radical expressions and their diversified effects, rather than usurping it in a single capitalist totality (even though the outcome may still be a capitalism with all its tendencies). In a similar way, Moore’s understanding of the web of life neglects to a large extent the role of social struggle in *constituting* capitalism and leading to varieties of capitalism. His revised law of value appears for the most part as a natural law. Only casually is some contestation mentioned; for example, when he identifies a ‘revolt of extra-human natures’ (ibid., 127) in the form of superweeds that emerge as a consequence of monocultures of genetically modified soy. If this line of reasoning would have been followed more strongly, the importance of human revolts in shaping the world would have had a more central place in the analysis of concrete capitalism. Such revolts, whether large or small, change the world, though not necessarily in a way that pleases its initial agents. A worrying effect of representing capitalism as a unitary substance is the emphasis on its self-sustaining character. This may have the performative effect of underscoring its strength while rendering invisible the cracks (Holloway 2010) while agency and imaginations of alternatives turn irrelevant and unrealizable (Gibson-Graham 2008). Instead of a capitalism that is beyond any control and for which we just have to wait until it destroys itself, critical agrarian studies could conceptualize capitalism as constituted by a set of rules and practices which are produced, reproduced as well as distorted and disrupted through enactments (Holloway 2011). This opens a research agenda which includes social struggles, creative practices and possibilities for different futures; and an openness of the future that takes the notion of politics and alternatives seriously (Massey 2005, 11).

The notion of different forms of capitalism and diverse practices brings us to our third rethinking of the World-Ecology approach. The nature of capitalism as an endless frontier process (Moore 2015, 107) to create the Four Cheaps – labour power, raw materials, energy and food – suggests a unified strategy or teleology in capitalism (Patel and Moore (2017) extend the Four Cheaps to Seven Cheaps).⁸ This representation of capitalism seems to have only one kind of capitalist, and runs the risk of leading to a neglect of strategies and class fraction interests in the real world. Raw material suppliers, energy companies, large food producers or service firms that organize the supply of labour do not necessarily benefit from going cheap. For critical agrarian studies it is important not to presume a unified capitalist going-cheap strategy, but to also study how groups of capital try to make the commodities they sell expensive: creating monopolies by pushing for certain state regulations (e.g. quality criteria, import barriers), demanding stricter law enforcement that excludes price-reducing competitors (Jansen 2017), reducing production through cartels and so on. A single drive for cheap food is too simple an abstraction to understand diversified capitalist strategies.

This brings us back to the whole and the parts. Though it seems that Moore’s singular monism and Foster’s view on dialectics are not compatible with one another, there is a way to reconcile the approaches. Harvey’s (2014, 9) distinction between capital and capitalism can be instructive here. While capital is value in motion, capitalism is a social formation in which capital accumulation is hegemonic in shaping the material basis of social life. However, this social formation encompasses various contradictions and inequalities, among them gender, ethnicity and (cultural) identity, co-determining outcomes. Intersections between gender and

capital or 'race' and capital are historically important, yet have to be distinguished analytically from the logic of capital accumulation. To cut the argument short, Moore's use of the double internality to understand the expansion of capital through the processes of capitalization (or commodification) and appropriation can still be combined with a nature-society duality in capitalism as well as an analysis of multiple contradictions and inequalities that work around gender, ethnicity or (cultural) identities.

CONCLUSION

The World-Ecology approach yields several illuminating insights. It formulates a powerful critique of the concept of the Anthropocene and the idea of a singular humanity. By replacing the Anthropocene with the Capitalocene, Moore is able to show how the capitalist mode of production, and its internal contradictions, have produced the environmental crisis. Furthermore, Moore's analysis foregrounds the idea of the co-production of nature and society within a specific historical context. However, together with a radical rejection of dualistic thinking, Moore's analysis also tends to obscure: (1) contradictions between capital and its antagonists; (2) social struggles around these contradictions; and (3) the possibility of change. His monism, which is enthusiastically put forward in his work, runs the risk of reducing everything to the singular. To this, we may need to restore a notion of dialectics, but not as a rejection of distinctions (therefore labelled as dualisms) but as a process in which social change occurs as a result of contradictions between the parts from which the whole emerges; some parts, such as elements of nature, have to be distinguished analytically and not fully turned social. Moore (2015, 4) mentions the risk of collapsing distinctions, or what he calls 'the danger of Greek holism', but systematically rejects reflections of nature *and* society by other thinkers as dualisms. Yet a dialectical approach necessitates a language in which we distinguish nature and society, labour and capital, etc. This implies that we cannot define the development of capitalism in terms of two internal processes to capital. This effaces contradiction in society, and not only the contradiction between capital and labour but also gender- and (ethnic) identity-based contradictions, and struggles organized around these contradictions. This will allow in turn an understanding of change beyond that of an expansion of capitalism through the opening up of new frontiers of appropriation that will bring about its end when all frontiers are exhausted. It creates room for conceptualizing change as more complex and problematic than the idea of capitalism progressively working towards its epochal crisis.

We have offered a reinterpretation of Moore's analysis, from, it might be said, capitalism in the web of life to capital in the web of life, so as to distinguish between capital and its logic of accumulation, and capitalism as a historic formation marked by a range of contradictions. This could create fertile ground for the further development of critical agrarian studies as it requires viewing capital as one process within the context of multiple determinations.

NOTES

1. One such expansion, Moore argues, has been the development of biotechnology as a means to extend the Cheap Nature quest, though it failed to tame nature (Moore 2015, 273).
2. Moore (2015, 85) himself uses the term monism. He states: 'Instead of asking what capitalism *does* to nature, we may begin to ask how nature *works for* capitalism?' (ibid., 12).

3. This argument could be extended to Moore's correct observation that appropriation is being made possible through the process of coding, quantifying and rationalizing nature. It is probably true that the advancement of science and technology to measure converges with the emergence of capitalism and has been an important driver, but this does not mean that rationalizing as such was not essential to earlier forms of agriculture. The scale and pace may have changed, and therefore the impact, but rationalization itself is not unique to capitalism. Is it possible to imagine an alternative agriculture without it?
4. We slightly depart here in wording from Moore, in line with the criticism that in abstract terms a distinction can be made between humanity and the rest of nature.
5. Here we use a slightly different wording, leaving open the possibility that capitalism can exist without new frontiers. The latter is an impossibility for Moore; the end of capitalism comes because the required frontiers have been exhausted.
6. The use here of the term 'integrated' could be read either as necessary relationships (as Moore does) or as a more contingent, though not less driving, set of interactions (as we do).
7. The casual use of the term 'manifold' could speak in defence of Moore and put him in line with our argument, but in our reading this 'manifold' does not find expression in the rest of his book. The same with the label 'singular metabolism of many determinations' (ibid., 81): the many determinations remain unspecified and not discussed.
8. Moore also writes about the appropriation of unpaid labour/nature. Cheap food (like cheap housing) functions to cheapen labour power. Furthermore, energy can be seen as raw material (e.g. as fuel). Hence, analytically this implies, in fact, two categories: cheap labour and cheap raw material (bringing us back to Marx). We consider the concept of Cheap Food (a commodity produced in capitalism, amongst others by petty commodity producers) and Cheap Nature, as appropriated and not yet fully commoditized (not yet 'capitalized' as Moore would say), as being different in character.

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