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Gareth Bryant, *Carbon Markets in a Climate-Changing Capitalism*, Cambridge: Cambridge University Press, 2019. ISBN: 9781108421737 (cloth); ISBN: 9781108377591 (ebook)

As critical scholars and observers of climate policy know all too well, carbon markets have been the defining policy framework for addressing climate change ever since the latter rose to prominence as a major global challenge. The dominance of the market-based approach to the climate question was further entrenched after the 1997 Kyoto Protocol placed emissions trading and carbon offsetting squarely at the centre of the international climate policy regime, and again after the European Union Emissions Trading System (EU ETS) was launched in 2005 to replicate this agenda on a regional, EU-wide scale. For this reason, the spectre of carbon markets has loomed large over the fate of the Paris Agreement ever since its ratification at COP21 in 2015.

Yet, despite almost 20 years of experience with carbon markets at the time of its signing, the Paris Agreement remains vague about how to put into practice the provisions of its Article 6, which establishes a Sustainable Development Mechanism intended to allow emission reduction credits to be traded internationally. This has become the crux of a heated debate which, for several years in a row, has resulted in the postponement, from one COP to the next, of decisions on how emissions in one country can be offset by investing in low-carbon technologies in other countries.

But why has it been so difficult, up to now, to establish an international carbon market under the Paris Agreement? An answer to this question can be found in Gareth Bryant's excellent book, *Carbon Markets in a Climate-Changing Capitalism.* As will be clear from this review, despite its slim size this is not an introductory text on carbon markets but, rather, a very dense book with a complex and intricate argument, presupposing knowledge of the dynamics of existing carbon markets, mainstream climate policy and its theoretical underpinnings, and Marxist accounts of capital's relation with nature. Nonetheless, Bryant's account is a demanding but extremely rewarding read, which has a lot to offer to both radical geographers and climate activists opposing market-based climate policy.

For Bryant, the inability of the Paris Agreement negotiations to define and implement an international carbon market reflect a broader "paradox in global climate policy", whereby

"strong commitment to the superiority of market-based approaches, if not their institutional requirements, persists in the context of crises in existing carbon trading schemes and a rapidly warming climate". This "paradox of carbon markets" needs to be studied and explained, for how it "is understood, and responded to, has become a significant factor in shaping the course of the crisis of climate change" (p.2).

Departing from mainstream conceptualisations of climate change as market failure, Bryant frames his account of the marketisation of climate change and its implications for the future of global climate action within a broader "analysis of carbon markets in the context of climate-changing capitalism" (p.3) (henceforth CCC). To this end, he develops a tight dialogue with Marxist ecology and geography – including key contributions by Neil Smith, David Harvey and Erik Swyngedouw on the production of nature – together with various "strands of critical literature on capitalist relations with, and within, nature" (p.25) – including Jason Moore's (2015) conceptualisation of accumulation by appropriation and accumulation by capitalisation. From these debates, Bryant carefully carves out the notion of CCC which, in stark contrast with the theoretical underpinnings of mainstream climate policy, emphasises two significant aspects attending to the "co-production of capitalism and climate change" (p.26). First, climate change is a phenomenon which is "produced by capitalism … [and] is quite literally changing the planet's climate". And, second, "the very nature of capitalism is being changed by climatic conditions that are partly of … [its] own making, but in an uneven and contested – not universal – manner" (p.25). Thus, Bryant progressively develops the notions of "appropriation", "commodification" and "capitalisation" as distinct typologies of "capitalist relations with, and within, nature" (p.3), exploring their implications with respect to distinct connotations of "carbon" and the role of carbon markets in shaping contestation over climate change. This allows him to distill three fundamental socio-ecological, economic and political contradictions of carbon markets in CCC, which summarise the book's key contribution.

In the first chapter, "Conceptualising Carbon", Bryant addresses accumulation by appropriation – i.e. the nexus of "actors, institutions, and relations that organise the appropriation of carbon to support the expanded accumulation of capital in fossil fuel industries" (p.42) – through close analysis of the data on polluting companies and

installations regulated by the EU ETS. Thus, mapping the uneven "socio-spatial distribution of greenhouse gas emissions" over "corporate groups, sites of production, and ownership structures" (p.32), Bryant retraces the origin of a great part of EU ETS greenhouse gas emissions in "a relatively small number of large-scale fossil fuel intensive power stations and factories … owned by an even smaller number of corporations and governments" (p.15). Indeed, this analysis shows that, if corporations are the crucial institution through which capital orchestrates the appropriation of carbon, and if the material properties of fossil fuels play a crucial role in determining the "scale of polluting labour processes" at specific installations, states also play a crucial role in the production and mediation of climate change by "wielding significant control over emissions through state ownership of polluting companies and infrastructure" (p.32).

Against this background, in the second and third chapters, "Internalising Carbon" and "Externalising Carbon", Bryant addresses the relationship between carbon appropriation and the processes of carbon commodification and trading. Showing that the design of the EU ETS results from a contested policy debate centred on the view that "a formally equal carbon market would 'level the playing field'" (p.44), the second chapter examines how the regulatory basis of the EU ETS works to "separate, objectify and equalise uneven relations of carbon appropriation" (p.54) across specific installations and emissions, not least through a case study of the largest polluting corporation and buyer of allowances in the EU ETS (multinational German energy utility RWE).

Owing to the link between the EU ETS and the Kyoto Protocol's Joint Implementation and Clean Development Mechanism, the socio-ecological relations presiding over the commodification of carbon extend well beyond the EU ETS to both industrial and developing countries. This is the object of the third chapter. Here, drawing on Harvey's understanding of spatial fixes and their role in displacing and deferring capitalist crises, Bryant examines carbon offsetting as a spatio-temporal fix allowing corporations active in the EU ETS to expand "the different forms of carbon appropriation covered by carbon markets" along the spatial axis, and to "represent relationships between projects and emissions reductions over a period of time in commodity form" (p.86) along the temporal axis. Thus, based on the analysis elaborated in these two chapters, Bryant identifies a first contradiction

of carbon markets in CCC – i.e. "the contradiction between the substantively unequal relations of carbon appropriation that underpin the climate change problem and the formally equal relations of carbon commodification that structure the carbon market solution" (p.43) – which ultimately allows the substitution of less effective for more effective forms of climate action through their equalisation via the market mechanism.

The fourth chapter, "Valuing Carbon", departs from the more concrete aspects of carbon commodities and takes the analysis into the realm of "the value relations that are co-imbricated with carbon trading" (p.16). With this move, Bryant reevaluates the relationship between carbon markets and the processes of capital accumulation, calling into question the prevailing political economic account of carbon markets as an accumulation strategy for capital. To do so, he highlights "the 'capitalisation' of carbon", i.e. "the shift that occurs when the expansion of commodification makes areas of socio-ecological life that were formerly freely appropriated by capital the direct object of capital accumulation" (p.99). As Bryant accurately demonstrates (pp.99-108), the dynamic of carbon prices and the corresponding rise and fall of carbon trading profits have thus far stunted the development of carbon markets, hampering their capacity to deliver financial gains aligned with financial actors' anticipations. In turn, this unsettles the relevance of the prevailing political economic consensus on carbon markets. This analysis leads Bryant to advance a conception of carbon commodities as a new form of capital which, in contrast to rent-based understandings of carbon markets as a state-driven accumulation strategy, understands capital as "a *socio-ecological* relation of self-expanding value" (p.113), and finance and nature as actively engaged in constituting capitalist value relations. Thus, examining instances where carbon functions as credit, collateral and risk, Bryant's analysis underscores "tensions between state support for accumulation by appropriation and accumulation by capitalisation" (p.16), which feed into what he identifies as the second contradiction of carbon markets in CCC, i.e. "that the carbon market accumulation strategy requires ongoing accumulation in fossil fuel industries" (p.99).

Finally, in the fifth chapter, "Contesting Carbon", Bryant explores the role of carbon markets in shaping contestation over climate change. This exploration has a twofold focus. Empirically, it examines three specific reform proposals of the EU ETS, together with their

attendant debates between states, capital and environmental non-governmental organisations. With respect to theory, it engages with two related but contrasting accounts of the politics of carbon markets and climate change – MacKenzie's (2009) post-structuralist techno-politics of carbon markets, which invites a politics of market design, and Swyngedouw's (2010) post-political view of carbon markets as part of a shift foreclosing alternatives to technocratic depoliticisation. With these preoccupations in mind, the chapter revisits in chronological order the debates on industrial gas offset restrictions, the management of allowance supply, and the policy mix in the 2030 climate and energy package, respectively characterising each as concerned with the "reach, force, and priority of carbon market value determinations in climate policy" (p.124). This analysis allows Bryant to determine that "the EU ETS has indeed been actively constituted by a 'politics of market design' that has developed beyond questions of support for or opposition to carbon markets" (p.145), with real, but also varied and limited success in terms of both immediate and longer-term policy outcomes. In turn, this also underscores the tensions for states inherent in the recourse to "carbon markets as a means to regulate the production of climate change" (pp.145-146), leading Bryant to identify a third and final contradiction of carbon markets in CCC, i.e. that:

> the institutionalisation of carbon markets privileges political actors and interventions that mobilise the singular logic of carbon pricing, undermining the portfolio of climate policies required to slow climate change. (p.146)

As Bryant appropriately remarks, the "marketisation of climate policy in the EU has thus shaped climate politics by encouraging sharp political contestation over carbon market reform while disadvantaging policy alternatives outside the market paradigm" (p.146). Nonetheless, as the current Covid-19 pandemic has caused carbon prices to fall once again,[1] the question of carbon markets' economic viability for industrial and financial actors is posed once more, and the carbon lobby is already at work trying to use the pandemic as a pretext to delay acutely needed climate action (see Carbon Market Watch 2020). This makes the development of radical democratic alternatives an urgent imperative, not least in order to plan

[1] See https://ember-climate.org/carbon-price-viewer/

a transition away from fossil fuels that is able to address the full extent and socio-ecological complexity of the climate crisis. To this end, thanks to its insistence on placing climate policy within CCC, Bryant's book and the three contradictions it highlights offer to critical geographers, climate scholars, and climate activists an indispensable tool for assessing competing climate policy approaches, together with the concrete material interests and political contests which underpin and structure them. As such, it will prove indispensable reading for those wanting to reorient climate policy beyond its current mainstream commitment to markets and towards the promotion of alternative democratic futures.

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