



Capitalizing on chaos: Climate change and disaster capitalism*

Robert Fletcher

abstract

While conservative critics complain that serious attention to anthropogenic climate change will adversely impact economic growth, radical environmentalists contend that mitigating climate change in the long term will require substantial transformation of the capitalist system, if not this system's demise altogether. In the short term, however, addressing climate change has become a boom industry in its own right, a source of substantial growth in a variety of sectors. This provides support for Naomi Klein's (2007a) 'disaster capitalism' thesis, which contends that neoliberal capitalism both precipitates disasters and employs these same disasters (and others) as an opportunity to facilitate its expansion. As a result, far from experiencing the constraint predicted by ecological Marxists, in the present capitalism is actually able to harness crises to which it contributes as a source of further expansion. The long-term implications of this dynamic, however, are unclear, demanding further investigation. I illustrate this analysis through discussion of the exponential growth of financing to address climate change, centered on trade in international carbon markets, following the issue's recent ascendance to become the new 'master concept' within global environmental governance generally.

Introduction

In this article, I suggest that the growing effort to address anthropogenic climate change through carbon markets and other financial mechanisms constitutes a form of 'disaster capitalism' (Klein, 2007) whereby neoliberal policies seek to harness crises to which they themselves contribute as opportunities for continued economic expansion. This thesis stands in stark contrast to much of the critical commentary on climate policy circulating within the public sphere at present. Mainstream efforts to address climate change by the international community are commonly contested by critics on both ends of the political spectrum, who similarly claim – albeit for dramatically different reasons – that sustained economic growth within a capitalist framework is likely incompatible with the systemic societal changes necessary to mitigate the climate impacts predicted by such authoritative bodies as the Intergovernmental Panel on Climate Change (IPCC,

* An earlier version of this paper was presented at the conference 'Climate Change: Disaster or Opportunity' at the University for Peace in Ciudad Colón, Costa Rica, 17 April 2010. Thanks to Sian Sullivan and Steffen Böhm for valuable assistance in preparation of this current version.

2007). From the right, for instance, Robinson, a researcher with the ultraconservative American Enterprise Institute, asserts:

Mitigation would have an enormously negative effect on developed economies and would cause a serious setback for emerging nations. . . [I]s it worth wreaking havoc on the global economy to prevent a level of warming to which we could adapt in the course of a century? (2008)

For commentators on the far left, by contrast, the root of the problem lies in the nature of capitalism itself (e.g., Foster et al., 2009; Wallis, 2009). As Foster and coauthors contend:

It is becoming increasingly evident that capitalism, given its insatiable drive for accumulation, is the main engine behind impending catastrophic climate change . . . [N]othing less than an ecological revolution—a fundamental reordering of relations of production and reproduction to generate a more sustainable society—is required in order to prevent a planetary disaster. (2009: 1085)

This thesis builds, of course, upon a longstanding line of thought within ecosocialist literature (see e.g., O'Connor, 1988, 1994; Sandler, 1994), the basic structure of which is well-rehearsed. Capitalism, critics contended, is founded upon the inherent contradiction identified by Marx, the fundamental tension between capitalists' desire to extract maximum profit from a system and the necessity that enough income remain in workers' hands to absorb production so that this profit can be realized. This contradiction periodically results in a crisis of overproduction/overaccumulation during which consumption stagnates and the economy retracts. In order to resolve this crisis, excess accumulated capital must be displaced into productive enterprises once more, forcing capitalists to pursue what Sandler (1994) calls the GOD ('Grow Or Die') imperative. This is accomplished through the spatial, temporal, and or time-space 'fixes' described by Harvey (1982, 1989), by means of which an overaccumulation crisis can be (temporarily) forestalled.

The attempt to resolve an accumulation crisis through expanded production, however, exacerbates what James O'Connor (e.g., 1988, 1994) calls capitalism's 'second contradiction', the opposition between the growth imperative and the limited conditions of production (including natural resources) upon which this growth depends. O'Connor's thesis holds that as conditions of production are increasingly taxed in order to increase output and reestablish a high rate of profit, production costs rise, reducing profit once more and forcing further intensification in order to attempt to raise returns, which merely augments the same dilemma and eventually precipitates a converse crisis of underproduction. Thus, capitalism's two contradictions reinforce one another in an ever-worsening – and inherently unsustainable – feedback loop, one of the consequences of which is continued ecological degradation. Of course, the social and environmental dynamics operating in this model should not be viewed as separate but intricately entangled in a dialectical relationship (pace Moore, 2011).

Mainstream advocates of climate change mitigation policy, on the other hand, increasingly contest claims such as these by arguing that successfully addressing climate change is in fact compatible with sustained economic growth. The influential Stern Review, for instance, calculates that atmospheric carbon concentrations can be stabilized at what the authors consider a manageable level of 500-550 ppm (a quantity

considered excessive by others; see e.g., Foster et al., 2009) with a maximum cost of 1% of global GDP by 2050 in the short term (this figure, however, has been fiercely contested by other economists; e.g., Weitzman, 2007). Even this loss, however, would be ostensibly offset by the creation of new markets in the long term (more on this below), and the Review thus maintains:

The world does not need to choose between averting climate change and promoting growth and development. . . Tackling climate change is the pro-growth strategy for the longer term, and it can be done in a way that does not cap the aspirations for growth of rich or poor countries. (Stern et al., 2006: Executive Summary, i-ii)

Implicit in this statement is an even stronger position, namely that addressing climate change is not merely compatible with economic growth but constitutes a form of economic growth itself. A similar perspective is offered in Al Gore's equally influential book/documentary *An Inconvenient Truth* (2004), in which the former US Vice-President turned celebrity environmentalist (Brockington, 2009) also seeks to counter fears that addressing climate change will compromise economic growth (represented by the striking image Gore presents from a Bush Administration slide show of a scale holding the earth on one side and a stack of gold bars on the other) by outlining the numerous ways in which climate-friendly products and services can be developed and sold to maintain US competitiveness in the global economy.

Such characterizations of the climate crisis as a new business opportunity have multiplied in recent years. As but one of many examples, financier Stanley Fink asserted in September 2008 at a gala banquet in support of Prince Charles' Rainforest Project:

Leaving aside the immeasurable value offered by our rainforests' diversity and water conservation functions, we are facing an almost unfathomably large business opportunity, one which we can share with the Rainforest nations of the world. . . With an estimated 610 billion tonnes of CO₂ sequestered by our tropical rainforests, a vast \$18 trillion business opportunity is before us. (cited in Brockington and Duffy, 2010a: 469)

This perspective – that combating climate change can be not merely compatible with economic growth but a form of growth in its own right – calls to mind investigative journalist Naomi Klein's (2007a) analysis of what she terms 'disaster capitalism', defined as 'orchestrated raids on the public sphere in the wake of catastrophic events, combined with the treatment of disasters as exciting marketing opportunities' (2007a: 6). In Klein's framework, neoliberal capitalism has, since its explosion onto the global stage beginning in earnest in the 1970s (see Harvey, 2005), prescribed what she calls a 'shock doctrine' of endeavoring to exploit the disorientation and confusion attending crises, both 'natural' and social, as a means of expanding free market policies in the course of recovery efforts. She identifies the response to Hurricane Katrina in New Orleans (in the wake of which the public school system was largely privatized, among other neoliberal measures) and the 2004 tsunami in Asia (after which numerous formerly-public beaches were expropriated for development by large hotel chains and local fisher people displaced) as paradigmatic examples of this strategy.

In a similar spirit, Cooper, following Gowan (1999), describes the 'productivity of turbulence', asserting:

The production of monetary and financial turbulence, whether threatened or real, exercises an undeniable political leverage. It enables the international financial institutions to force through the privatization of state industries, welfare and infrastructure, and to further impose forms of debt-financing. . . that are most volatile and most profitable to the institutional investment funds. (2010: 168)

Response on the part of the international community to global climate change concerns appears increasingly amenable to analysis as a form of disaster capitalism as well. Indeed, the Stern Review predicted precisely this in its conclusion, asserting:

Action on climate change will also create significant business opportunities, as new markets are created in low-carbon energy technologies and other low-carbon goods and services. These markets could grow to be worth hundreds of billions of dollars each year, and employment in these sectors will expand accordingly. (Stern et al., 2006: Summary of Conclusions, viii)

While Klein herself alludes to the connection between climate change response and disaster capitalism at several points, she does not develop the analysis. Likewise, two recent articles analyzing the growth of carbon offset markets briefly note this same connection but do delve into it either (Paterson, 2009: 250; Sullivan, 2009: 256). The link has also been discussed in a handful of popular media sources (e.g. Funk, 2010; Thompson, 2010). Cooper (2010), as noted above, offers a somewhat analogous framework, yet, her analysis of how ‘turbulence’ functions within climate change response, described further below, remains nascent as well.

In what follows, then, I describe the various ways in which the international climate change response can be seen as a form of disaster capitalism. I begin with a brief discussion of the originality of Klein’s thesis vis-à-vis an emerging body of literature exploring neoliberalization within natural resource management policy and practice. I then provide an overview of the recent exponential growth of funding to combat climate change, particularly in terms of the rise of markets for trade in carbon emissions credits over the past several years, during which time the climate crisis has become what White and colleagues (2009: 2) call ‘the new “master concept” of environmental governance’. Following this, I describe the ways in which climate change finance has become increasingly tied up with neoliberal capitalism in this period, emphasizing mitigation through market-based mechanisms. I conclude with a call for more assessment of the consequences of this disaster capitalism response to the growing climate crisis, evaluating to what extent it is in fact capable of providing its intended ‘fix’ to capitalism’s looming contradictions.

Neoliberal nature

In a sense, the application of Klein’s disaster capitalism thesis to environmental policy can be seen as a twist on the rapidly growing literature analyzing neoliberalization within natural resource management generally (see e.g., McCarthy and Prudham, 2004; Bakker, 2005; Heynen and Robbins, 2005; Swyngedouw, 2005; Heynen et al., 2007; Smith, 2007; Castree, 2008). This research documents numerous cases in which natural resources previously externalized within conventional commodity markets are themselves commodified as a source of further profit through enclosure and sale within

neoliberal markets. Hence, Castree (2008) describes such activities as providing a series of 'environmental fixes' for capitalism's central contradiction in pursuit of new sources of income to combat falling rates of profit, including: 1) commodifying and trading new forms of 'natural capital'; 2) replacing state control of resources with capitalist markets; 3) intensifying exploitation of a given natural resource to yield increased short-term profits; and 4) transferring resource governance responsibility (and thus revenues) from states to non-state actors. In this sense, neoliberalization of natural resources can be seen as part and parcel of the strategy of 'accumulation by dispossession' that Harvey (2005) finds characteristic of neoliberalism in general, in terms of which wealth is generated less through creating wholly new sources of value than by appropriating resources formerly controlled by others or held in the public domain for the enrichment of a minority elite.

Addressing climate change (which the Stern Review (2006) famously pronounced the world's greatest externality) through creation of carbon markets has been described in just this manner by Bumbus and Liverman (2008). Yet, the majority of the neoliberal nature literature describes attempts to create markets for the sustainable use of natural resources. Climate change response stands somewhat distinct from this, however, in that its aim is, on the contrary, to encourage resources' non-use, by, for instance, leaving forests intact and fossil fuel in the ground to avoid the release of greenhouse effect-inducing carbon into the atmosphere. In this respect, climate change response is best considered as an aspect not of neoliberal natural resource management generally but of neoliberal conservation in particular. As researchers increasingly observe, the global effort to preserve natural resources from extraction and use has itself become progressively neoliberalized over the past several decades (e.g., Sullivan, 2006, 2009, forthcoming; Igoe and Brockington, 2007; Brockington et al., 2008; Brockington, 2009; Brockington and Duffy, 2010b; Büscher, 2010; Fletcher, 2010a), and this practice requires distinct mechanisms for attempting to harness the value of resources in situ (Büscher et al., 2012), as I describe further below.

What Klein's disaster capitalism frame adds to this analysis is an understanding of how the perception of crisis is employed as a strategy to facilitate this neoliberalization of resource control and marketing. And while this dynamic has been alluded to within the neoliberal conservation literature (Brockington et al., 2008; Sullivan, 2009, forthcoming), its application to address climate change response remains little developed (cf. Cooper, 2010). It is this dimension of harnessing the image of climate change as an impending disaster to promote new forms of neoliberal governance and market enclosure that my analysis seeks to highlight.

Importantly, Klein's analysis also suggests an intriguing amendment to O'Connor's (1988, 1994) analysis of capitalism's second contradiction that has recently been highlighted by neoliberal conservation researchers (Brockington et al., 2008; Igoe et al., 2010; Neves, 2010; Sullivan, forthcoming; Fletcher, 2011). While O'Connor's analysis predicted that exhaustion of the conditions of production would eventually raise costs and thus reduce the profit gleaned from capitalist enterprise, Klein's thesis suggests that in the short term, paradoxically, the ecological degradation caused by capitalist production can itself be harnessed as a further source of profit in its own right. Researchers have documented this process, for instance, in the practice of ecotourism,

which is able to generate greater revenue in the form of heightened admission charges as its objects (whales, rainforest, etc.) become increasingly scarce (Neves, 2010; Fletcher, 2011). As I describe below, climate change response via carbon markets displays much this same dynamic.

Climate change stands somewhat distinct from the majority of crises Klein (2007) includes in her analysis, which tend to be concrete, short-term, and relatively localized phenomena (such as hurricanes, tsunamis, and wars) whose impacts are immediate and easily linked with their cause. By contrast, climate change is characterized by great uncertainty concerning both its repercussions and the timeline over which these will occur (IPCC, 2007). Moreover, most of serious consequences that do occur will likely unfold incrementally, over substantial periods of time, and it may be difficult to directly link localized impacts with such a diffuse, global source. Despite these ambiguities, however, climate change is increasingly framed as a disastrous crisis, the consequences of which will likely be devastating if not immediately addressed in a substantial manner (Gore 2004; Stern et al., 2006), and in this respect the climate crisis is amenable to analysis within the disaster capitalism frame. The climate crisis, however, was caused less by neoliberal processes per se than by an industrial capitalism grounded in fossil fuel exploitation originating in the 1700s – for which neoliberalism, indeed, serves as an attempted corrective, endeavoring to internalize natural resources as essential means of production requiring long term nurturance (along with additional value creation) in what Martin O'Connor (1994) calls capitalism's 'ecological phase' (see also Brockington et al., 2008).

Finally, it is important to acknowledge that the effort to exploit climate change as a business opportunity remains the minority response among capitalists, the majority of whom continue to ignore the phenomenon or deny that it exists altogether, as myriad critics lament. This of course reveals that capitalism is not a monolithic entity but a complex system containing diverse and divergent interests and forces. Yet, to the extent that influential actors within the capitalist system do take the prospect of an impending climate crisis seriously it is by and large within the disaster capitalism frame – and this response, as described further below, is increasing by leaps and bounds at present. It is to this response that I now turn.

Climate finance and disaster capitalism

As evidenced in the definition cited earlier, there are two distinct yet interrelated elements in Klein's disaster capitalism concept: 1) the neoliberalization of structures for governing resources formerly within the public domain and/or creation of markets for trade in previously non-monetized commodities; and 2) the exploitation of disasters for financial gain. Let us consider the second of these first.

The *Stern Review* (2006) forecasted future financial markets directed toward climate mitigation and adaptation in the neighbourhood of US \$500 billion, and progress towards this figure appears to be well apace at present. This growth can be observed most centrally in the emergence of carbon trading markets, much of which has been facilitated by the Kyoto Protocol, whose 'flexible mechanisms' (e.g., the so-called

Clean Development Mechanism (CDM)) provide for the creation of such markets. These mechanisms arose largely due to demands from wealthy countries that displacing their emissions to poorer societies by paying the latter to reduce their own emissions would be more efficient than pursuing reductions at home, where the cost would be much greater (Bumpus and Liverman, 2008). Since the Protocol entered into force in 2005, the growth in global carbon markets has been astronomical.

According to World Bank statistics, in 2005 the total global market in carbon trading amounted to approximately US \$10 billion (World Bank, 2007). By 2006, it had tripled to US \$30 billion (World Bank, 2007), doubling to \$63 billion by 2007, then doubling again to \$126 billion by 2008 (World Bank, 2009). In 2009, despite the global economic crisis, the market grew 8% to reach almost \$144 billion (World Bank, 2010). In 2010 (the latest figures available as of this writing), however, the recession (as well as questions concerning the prospects of a post-Kyoto agreement) finally caught up with the carbon market, causing it to drop slightly to just under \$142 billion (World Bank, 2011).

Within the carbon market, the European Trading Scheme (ETS) constitutes by far the largest trading carbon mechanism at present. Totalling nearly \$8 billion in 2005, the ETS market tripled to over \$24 billion the next year (World Bank 2007). Then it doubled in 2008, to \$49 billion, World Bank, 2009), and again in 2009, reaching \$119 billion (World Bank, 2010). In 2010, despite the recession, the market grew very slightly once more to \$120 billion (World Bank, 2011).

Growth in CDM offset trading – including both primary and secondary (in which contracts are traded through intermediaries such as banks rather than directly) markets – has until recently experienced similar growth, standing at US \$2.5 billion in 2005, doubling to \$5 billion in 2006 (World Bank, 2007), more than doubling again to \$13 billion in 2007, then almost tripling to nearly \$33 billion in 2008 (World Bank, 2009). In 2009, on the other hand, the total CDM market fell to just over \$20 billion due to the ‘complexity and changing nature of regulations, inefficiencies in the regulatory chain and capacity bottlenecks’ (World Bank, 2010: 2) and dropped slightly again in 2010 to \$19.8 billion overall (World Bank, 2011).

Of the CDM market, the largest share (approximately 26% to date) is dedicated to funding for hydroelectric projects, which are widely considered a form of clean, renewable energy production with zero greenhouse gas emissions (see Fletcher, 2010b). According to a database assembled by International Rivers, a watchdog NGO, as of 30 December 2011 the CDM had issued 65.9 million tCO₂e (tons carbon dioxide equivalent) in certified emissions reductions (CERs) across 395 hydro projects, and a total of 2083 projects were either registered or had applied for registration for future trading.¹

The global carbon market is predicted to expand even more dramatically in the future. One estimate forecasts that the market will reach \$2 trillion within the next several years (USCFTC, 2010), another that it will amount to \$3 trillion by 2020, and a third

1 www.internationalrivers.org/node/1785

that it will eventually total \$10 trillion (Bloomberg, 2010). Commenting on this potential, Sandor contends, 'We're going to see a worldwide market, and carbon will unambiguously be the largest non-financial commodity in the world' (in Bloomberg, 2010).

Klein's second attribute of disaster capitalism – the spread of neoliberal market mechanisms in the course of disaster response – can be observed most clearly in the growth of a carbon market parallel to government-directed mechanisms such as the CDM and ETS that trades in so-called 'voluntary carbon offsets' (VCOs). Bumpus and Liverman (2008: 137) observe that 'the VCOs have no formal governance structure', relying entirely on individual exchange among individuals and/or firms. Harris (2006) reports a 150% annual growth in VCO markets as of 2006 (cited in Bumpus and Liverman, 2008: 144), by which time, according to the annual assessment issued by the industry groups Ecosystem Marketplace and New Carbon Finance, the total market had reached \$91 million (EMNCF, 2007). By the next year, this had nearly quadrupled to \$335 million, doubling again to \$705 million in 2008 (EMNCF, 2009). As a result of the global recession, on the other hand, in 2009 the market dropped dramatically to \$415 million then rose again slightly in 2010 (the last year for which numbers are currently available) to reach \$424 million (EMNCF, 2011).

VCOs remain a small percentage of the overall carbon market, however, which, as previously noted, was last estimated at \$142 billion. Yet, even in the larger carbon market, in which both national governments and transnational financial institutions play a central regulatory role, a strong trend towards neoliberalization can be found. In this, it is important to acknowledge that neoliberalization does not necessarily equate only with privatization per se, as critics sometimes contend. Rather, as Castree (2008) among others points out, neoliberalization characteristically entails not so much deregulation as reregulation, shifting the locus of resource governance from states to non-state actors, including upwards to transnational financial institutions and downwards to nongovernmental organizations. Within neoliberal markets, however, the state is still required to create and sustain the overarching regulatory framework within which market actors engage in ostensibly free forms of exchange (Foucault, 2008; Peck, 2010). Thus, Foucault (2008: 132), for instance, contends, 'Neoliberalism should not be identified with laissez-faire, but rather with permanent vigilance, activity and intervention'.

In this respect, several researchers have observed within global climate policy in general a strong trend towards neoliberalization over time (Oels, 2005; While et al., 2009; Lohmann, 2009a). Prior to the 1980s, Oels (2005) describes, global warming was primarily construed as a threat to human life and addressed for the most part through a state-centered command and control approach emphasizing prevention via top-down mechanisms. Following the crystallization of the international sustainable development agenda in the late 1980s, however, climate policy went increasingly neoliberal in its reframing of global warming as principally a threat to continued economic growth, consistent with discussion of environmental problems within the sustainable development movement in general (Escobar, 1995). Then, While and colleagues (2009: 83) claim, following the Kyoto meetings in 1997 global climate policy underwent a further round of neoliberalization, evidencing 'a preference for market-based solutions

that establish a price for carbon, expressed in units of cost per tonne of carbon (tco₂), and a system of “cap and trade”, in which permits for emissions are rationed within an agreed limit and auctioned to firms or organizations’. (The authors note a further shift in 2005/6, after which time public discourse concerning climate change grew exponentially around the world, propelling the issue to become the new ‘master concept’ within environmental governance, as related above (While et al, 2009)). In short, the authors claim:

Carbon governance post-Kyoto has thus resulted in a complex and multi-scalar system for controlling carbon emissions, involving a degree of transfer of regulatory power upwards to the supranational level and outwards to markets and nonnational state actors, but also a continued emphasis on the management of carbon flows by nationstates. . . This would appear to be consistent with the wave of neoliberal marketization. (While et al., 2009: 85)

Similarly, Bumpus and Liverman (2008) call investment in carbon markets of whatever form a strategy of ‘accumulation by decarbonization’, building upon Harvey’s (2005) influential analysis of neoliberalism as a means of ‘accumulation by dispossession’, as mentioned earlier. According to Harvey, this strategy entails four interrelated movements: 1) commodification of resources; 2) resources’ financialization through incorporation within international markets; 3) the management of crises in the interest of the private sector; and finally 4) states’ functioning chiefly as agents of redistribution and regulation (rather than direct allocators of resource use) within all of this. Bumpus and Liverman (2008) find all of these attributes in global carbon markets as currently structured. While the bulk of the market remains regulated by governmental and inter-governmental policy, this regulation, consistent with neoliberal principles (see Foucault, 2008; Peck, 2010), serves primarily to establish the market’s parameters while leaving transactions largely to the self-direction of the individual participants. Thus, Bumpus and Liverman (2008: 145) assert, ‘Carbon offsets may be seen as a case of neoliberal environmental governance in which the management of an environmental problem is partly devolved to the market and to the individual but in which the state eventually establishes the rules under which markets operate’. In addition, the authors note that over time these ostensibly government-directed markets have become increasingly infiltrated by private actors, describing:

Enthusiasm for the carbon markets is increasingly driven by market actors who see possibilities for both direct investment in offset projects and indirect opportunities for commodification in secondary markets, such as verification of reductions, derivatives, and insurance associated with trading in emissions. (Bumpus and Liverman, 2008: 142)

All of this suggests that carbon markets should be viewed as an expression of what Peck and Tickell (2002) call ‘roll-out’ as opposed to ‘roll-back neoliberalism’. The authors describe ‘a shift from the pattern of deregulation and dismantlement so dominant during the 1980s, which might be characterized as “roll-back neoliberalism”, to an emergent phase of active state-building and regulatory reform – an ascendant moment of “roll-out neoliberalism”’ (Peck and Tickell, 2002: 384). Carbon markets were first established shortly following neoliberalism’s transition to roll-out status and clearly conform to this strategy in their creation of a novel framework to employ market mechanisms to regulate carbon use on a global scale.

The new frontiers

As a form of neoliberal conservation, climate response via carbon markets involves not merely *commodification* of natural resources but their *financialization* as well (Smith, 2007; Sullivan, forthcoming; Büscher, n.d.). As Büscher (n.d.) shows, this is necessitated by the unique nature of neoliberal *conservation* vis-à-vis neoliberal natural resource management in general. As opposed to resources whose use can be bought and sold within markets, the resources upon which carbon control (like other conservation measures) is based must by definition be preserved in situ, and thus creative means must be found to ascribe exchange value to these resources without granting access to their use. In other words, the ‘fixed capital’ (in the form of the localized natural resources) upon which conservation is based must be transformed into fluid capital that can be abstracted and freely circulated throughout the world. This leads to what Büscher (n.d.), following Marx’s description of financialization with capitalist markets in general as the creation of ‘fictitious capital’ (see Harvey, 1982, 1989), calls a strategy of ‘fictitious conservation’. This is achieved through creation and exchange of what Büscher (2010) elsewhere labels ‘derivative nature’, that is, financial mechanisms that gain their value not directly from the material resources or productive labour upon which they are ostensibly based but from an abstracted notion of what such resources are worth relative to speculative propositions concerning their future disposition. Carbon markets, which derive their value from predictions concerning the future effects of increased atmospheric carbon concentrations, clearly constitute just this type of exchange in financialized, derivative nature.

Financialization through conventional carbon markets is likely to continue its dramatic expansion into the foreseeable future, as described earlier, particularly given the recent endorsement by the UN Framework Convention on Climate Change (UNFCCC) of a global Reduced Emissions from Deforestation and Degradation (REDD+) mechanism, which is commonly predicted to spawn at least a \$30 billion market in the near future (see e.g., Phelps et al., 2010). Financialization of conserved nature via climate change response is currently being taken to new extremes as well, however. First, beyond discrete carbon markets such as the ETS or CDM, we are witnessing the development of more general fora for exchange in derivatives of these markets and other carbon products, including the already-established Chicago and European Climate Exchanges (the latter based in London) and similar emerging initiatives in other diverse locations including Australia, China, and Montreal (Bumpus and Liverman, 2008; While et al., 2009; Sullivan, forthcoming). In addition, Sullivan (forthcoming) describes the emergence of financial investment firms specifically devoted to consolidating and rendering interchangeable environmental ‘investment products across a broad range of asset classes’, as the Inflection Point Capital Management fund (which indeed calls itself ‘the world’s first multi-strategy asset management boutique’) puts it (in Sullivan, forthcoming). Likewise, EKO Asset Management Partners declares itself in the business of ‘discovering and monetizing unrealized or unrecognized environmental assets’ for exchange within and across multiple ‘environmental markets’, including those for carbon, water, and biodiversity (in Sullivan, forthcoming). Sullivan also notes recent exploration of the potential of carbon offset credits linked to population reduction programs in less-developed societies (proposed by Optimum Population Trust), as well as for government-issued ‘index-linked carbon bonds’, in which ‘interest payments are

linked to the actual greenhouse gas emissions of the issuing country against published targets', thereby conferring 'an excess return if the issuing country's emissions are above the government's published target' (in Sullivan, forthcoming).

In a similar vein, Cooper (2010: 170) describes the rise of a 'market for weather risk management' that 'extends beyond carbon trading to include a whole new spectrum of novel financial instruments designed to price and manage the risks associated with extreme weather events, natural catastrophes and unexpected temperature fluctuations'. These include 'catastrophe bonds, securities that manage the risks of improbable but catastrophic natural events, and environmental derivatives, financial instruments that respond to unpredictable fluctuation in the weather' (Cooper, 2010: 175) – both of which clearly conform to Büscher's (2010) 'derivative nature' frame, described above, in that they are specifically 'designed to price and trade both in the uncertainties of the weather and our own uncertainties about the future of climate change' (Cooper, 2010: 176). In this way, uncertainty concerning climate change impacts becomes not a hindrance to marketization but yet another opportunity for profit; both the climate crisis and uncertainty concerning the same become distinct sources of value, a double reversal of James O'Connor's (1994) predictions. Echoing the disaster capitalism thesis again, Cooper (2010: 175) observes of all this that 'the curious effect is that climate change – and the critical or singular events it may engender – has become a speculative opportunity like any other in a market hungry for critical events'.

Climate change's disaster capitalism response has spurred the rise of novel efforts to harness the crisis in the exploitation of more traditional commodity markets as well. Many of these trends are so recent that, to my knowledge, they have not yet been documented within peer-review sources. Funk (2010), for instance, describes a recent series of land grabs around the world by what he calls 'capitalists of chaos' who model climate change's projected impact on agricultural output in order to predict where land will likely increase in productivity so as to purchase it cheaply in the present in anticipation of the global food shortage climate change may precipitate. In this spirit, Funk (2010: 65) estimates, investors have already purchased 19 million acres in China and 6 million in both Saudi Arabia and South Korea. One North American, who has been explicitly accused of engaging in 'hyperdisaster capitalism' (Funk, 2010: 62), has singlehandedly acquired 1 million acres in southern Sudan, 'making him one of the largest private landholders in Africa' (2010: 59).

Similarly, the portion of Klein's official website devoted to 'disaster capitalism in action' describes climate change speculation on the part of multinational GMO manufacturers, relating that recently '[t]hree companies – BASF of Germany, Syngenta of Switzerland and Monsanto of St. Louis – have filed applications to control nearly two-thirds of the climate-related gene families' in order to 'leverage climate change as a way to get into resistant markets' as the growing crisis renders conventional crops increasingly less productive (Klein, 2010). While aimed at conventional commodity production, all of these endeavors are clearly founded in a similar derivative nature strategy as the various financial mechanisms detailed above.

Another curious aspect of the disaster capitalism response may involve ignoring or even actively working to discredit predictions of the impending climate crisis, in order to

harness both current sources of profit potentially compromised by a serious mitigation response and, moreover, to let the crisis unfold in anticipation of the new sources of profit thereby created. Klein asserts:

The disaster-capitalism complex does not deliberately scheme to create the cataclysms on which it feeds (though Iraq may be a notable exception), but there is plenty of evidence that its component industries work very hard indeed to make sure that current disastrous trends continue unchallenged. (2007b)

She highlights ExxonMobil's funding of climate change denial as an example of this trend (Klein, 2007b). GMO manufacturers' anticipation of expanded markets for drought-resistant seeds, noted above, may form another instance. In this way, rather than viewed as opposing processes, attempts both to explicitly harness the climate crisis as a source of profit and to ignore or deny it may, at times, be Janus-faced dimensions of a similar disaster capitalism response.

Conclusion

In the above, I have contended that the contemporary international response to climate change concerns, led by the global trade in carbon credits, increasingly functions as a form of disaster capitalism, exploiting the climate crisis as both a marketing opportunity and justification to expand neoliberal markets and regulatory mechanisms. In the process, carbon markets clearly seek to provide a number of the temporal, spatial, and environmental fixes described by Harvey (1982, 1989) and Castree (2008). In terms of Harvey's framework, carbon markets simultaneously displace capital geographically (e.g., from core to periphery through offset projects) and into the future through investment in 'sustainable development' projects in less-developed societies (e.g., through the CDM). Carbon markets can be seen to pursue at least three out of Castree's four environmental fixes as well: 1) commodifying and creating new markets for trade in carbon; while 2) privatizing emissions allocations through cap-and-trade strategies that; 3) displace state regulation of climate policy in favor of neoliberal mechanisms increasingly directed by market actors. In addition, as I have observed, carbon markets tap another source of profit neither Castree nor O'Connor seem to have predicted, harnessing the very ecological crisis exacerbated by capitalist expansion as a further source of value.

Future research would be useful to assess particular dimensions of this process, exploring how specific carbon markets or offset projects seek to accomplish these various fixes and the extent to which they succeed in this aim. In addition, research is needed to investigate the key question raised by this analysis: To what extent does all of this actually contribute to effectively mitigating the climate change impacts it purports to address? After all, critics question whether carbon markets truly effect a net emissions reduction or merely conceal continued carbon production through sleight-of-hand accounting. Lohmann (2009b: 149), for instance, evocatively argues, 'Carbon trading is one final bloated corpse that needs to be hoisted into a hearse and whisked away quickly before it poisons genuine investment initiatives'. Far from reducing emissions, Lohmann contends,

In their decade of existence. . . they have done precisely the opposite, by offering the heaviest fossil fuel polluters in industrialized societies new means for delaying the steps toward structural change that need to be taken immediately, while simultaneously providing supplementary finance for fossil-intensive industrial pathways in the South. (*ibid.*)

A striking example of the ways in which carbon markets may not merely fail to reduce but actually increase greenhouse gas emissions, despite the surface appearance of reductions, is in their financing of hydroelectric dams as an offset mechanism. As noted above, hydro projects are the most popular mechanism currently financed by the CDM. While hydro power, as mentioned, is commonly considered clean energy with zero carbon emissions by dam builders and their advocates, a growing body of research demonstrates that dams are in fact significant greenhouse gas emitters, primarily through releases of methane from vegetation submerged beneath their reservoirs as well as the energy expended in their construction. Some investigators, indeed, suggest that dams (particularly in tropical areas) may pollute more than equivalent coal-fire plants (see Mäkinen and Khan, 2010 for a survey of this research). Hence, employing hydro dams as offset projects – an increasingly common strategy around the world – has helped to restimulate a dam building industry that was in steep decline a decade ago (see Fletcher, 2010b), but it may be significantly increasing carbon emissions on a global scale as well.

Dynamics such as this demand further investigation in order to assess the extent to which the swiftly growing global campaign to address climate change through neoliberal carbon market mechanisms is in fact capable of contributing to an effective resolution of the impending crisis rather than merely stimulating capitalist expansion. Systematic research in this vein remains nascent (Olsen, 2007), partly due to carbon markets' fairly recent origin, and must be increased substantially in the future. Armed with this information, we will be much better positioned to contribute to deliberations concerning the future of climate change policy in relation to disaster capitalism.

This is particularly pertinent given the current global economic recession, which has provoked substantial contraction in funding for environmental initiatives generally and given rise to widespread predictions that the era of neoliberalism may be drawing to a close (e.g., Broad and Cavanaugh, 2008; Stiglitz, 2008). Disaster capitalism, of course, has been a core neoliberal strategy, serving to facilitate accumulation via privatization and market liberalization (Klein, 2007). If we are truly entering a 'post-neoliberal' era entailing new forms of public regulation over markets and commons (and there remain important questions concerning the extent to which this is in fact occurring), the efficacy of this strategy, for addressing climate change as well as other dynamics, may be seriously compromised. In addition, the recession may adversely impact the ability to generate funds to finance carbon trading (as has already occurred to some degree for the CDM and VCO markets, described above). These prospects, and their implications for the potential to effectively address climate change through carbon markets and other forms of financialization, demand further study as well.

references

- Bakker, K. (2005) 'Neoliberalizing Nature? Market Environmentalism in Water Supply in England and Wales', *Annals of the Association of American Geographers*, 95(3): 542-565.

- Bloomberg (2010) [<http://www.bloomberg.com/apps/news?pid=20601080&sid=aLM4otYnvXHQ>].
- Broad, R., and J. Cavanaugh. (2008) *Development redefined: How the market met its match*. New York: Paradigm Publishers.
- Brockington, D. (2009) *Celebrity and the environment: Fame, wealth and power in conservation*. London: Zed Books.
- Brockington, D., R. Duffy and J. Igoe (2008) *Nature unbound: Conservation, capitalism and the future of protected areas*. London: Earthscan.
- Brockington, D., and R. Duffy. (2010a) 'Capitalism and conservation: The production and reproduction of biodiversity conservation', *Antipode*, 42(3): 469-484.
- Brockington D., and R. Duffy (eds.) (2010b). *Antipode* 42(3). Special issue on *Capitalism and conservation*.
- Bumpus, A., and D. Liverman (2008) 'Accumulation by decarbonisation and the governance of carbon offsets', *Economic Geography*, 84:127-56.
- Büscher, B. (2010) 'Derivative nature: Interrogating the value of conservation in "Boundless Southern Africa"', *Third World Quarterly*, 31(2): 259-276.
- Büscher, B. (n.d.) 'Nature on the move: Capital, circulation and the value of fictitious conservation'. Unpublished article manuscript.
- Büscher, B., D. Brockington, J. Igoe, K. Neves, and S. Sullivan (2012) 'Towards a synthesized critique of neoliberal biodiversity conservation', *Capitalism Nature Socialism*, 23(2): 4-30.
- Castree, N. (2008) 'Neo-liberalising nature I: The logics of de- and re-regulation', *Environment and Planning A*, 40(1): 131-152.
- Cooper, M. (2010) 'Turbulent worlds: Financial markets and environmental crisis', *Theory, Culture & Society*, 27(2-3): 167-190.
- Ecosystem Marketplace and New Carbon Finance (EMNCF) (2007) *State of the voluntary carbon markets 2007*. New York and Washington DC: EMNCF.
- Ecosystem Marketplace and New Carbon Finance (EMNCF) (2009) *State of the voluntary carbon markets 2009*. New York and Washington DC: EMNCF.
- Ecosystem Marketplace and New Carbon Finance (EMNCF) (2011) *State of the voluntary carbon markets 2011*. New York and Washington DC: EMNCF.
- Escobar, A. (1995) *Encountering development: The making and unmaking of the Third World*. Princeton: Princeton University Press.
- Fletcher, R. (2010a) 'Neoliberal environmentality: Towards a poststructuralist political ecology of the conservation debate', *Conservation and Society*, 8(3): 171-181.
- Fletcher, R. (2010b) 'When environmental issues collide: Climate change and the shifting political ecology of hydroelectric power', *Peace & Conflict Review*, 5(1): 14-30.
- Fletcher, R. (2011) 'Sustaining tourism, sustaining capitalism? Theorizing the tourism industry's role in global capitalist expansion', *Tourism Geographies*, 13(3): 443-461.
- Foster, J.B., B. Clark and R. York (2009) 'The Midas effect: A critique of climate change economics', *Development and Change*, 40(6): 1085-1097.
- Foucault, M. (2008) *The birth of biopolitics*. New York: Palgrave Macmillan.
- Funk, M. (2010) 'Meet the new capitalists of chaos', *Rolling Stone*, 27 May.
- Gore, A. (2004) *An inconvenient truth: The planetary emergency of global warming and what we can do about it*. New York: Rodale Books.
- Gowan, P. (1999) *The global gamble: Washington's Faustian bid for world dominance*. London: Verso.
- Harvey, D. (1982) *The limits to capital*. London: Verso.
- Harvey, D. (1989) *The condition of postmodernity: An inquiry into the origins of cultural change*. Oxford: Basil Blackwell.
- Harvey, D. (2005) *A brief history of neoliberalism*. Oxford: Oxford University Press
- Heynen, N., and P. Robbins (2005) 'The neoliberalization of nature: Governance, privatization, enclosure and valuation', *Capitalism Nature Socialism*, 15(1): 5-8.

- Heynen, N., J. McCarthy, P. Robbins, and S. Prudham (eds.) (2007) *Neoliberal environments: False promises and unnatural consequences*. New York: Routledge.
- Igoe, J. and D. Brockington (2007) 'Neoliberal conservation: A brief introduction', *Conservation and Society*, 5(4): 432-449.
- Igoe, J., K. Neves, and D. Brockington (2010) 'A spectacular eco-tour around the Historic Bloc: Theorising the convergence of biodiversity conservation and capitalist expansion', *Antipode*, 42(3): 486-512.
- Intergovernmental Panel on Climate Change (IPCC) (2007) *Climate change 2007: The physical science basis*. Cambridge: Cambridge University Press.
- Klein, N. (2007a) *The shock doctrine: The rise of disaster capitalism*. New York: Metropolitan Books.
- Klein, N. (2007b) 'Disaster capitalism: The new economy of catastrophe', *Harpers*, October [http://www.democruptcy.com/disaster-capitalism/].
- Klein, N. (2010) [http://www.naomiklein.org/shock-doctrine/resources/disaster-capitalism-in-action/tags/gmos].
- Lohmann, L. (2009a) 'Neoliberalism and the calculable world: The rise of carbon trading', in S. Böhm and S. Dabhi (eds.) *Upsetting the offset*. London: MayFly Books.
- Lohmann, L. (2009b) 'Climate as investment', *Development and Change*, 40(6): 1063-1083.
- Mäkinen, K., and S. Khan (2010) 'Policy considerations for greenhouse gas emissions from freshwater reservoirs', *Water Alternatives*, 3(2): 91-105.
- McCarthy, J., and S. Prudham (2004) 'Neoliberal nature and the nature of neoliberalism', *Geoforum*, 35: 275-283.
- Moore, Jason (2011) 'Transcending the metabolic rift: A Theory of crises in the capitalist world-ecology', *The Journal of Peasant Studies*, 38(1): 1-46.
- Neves, K. (2010) 'Cashing in on cetourism: A critical ecological engagement with dominant E-NGO discourses on whaling, cetacean conservation, and whale watching', *Antipode*, 42(3): 719-741.
- O'Connor, J. (1988) 'Capitalism, nature, socialism: A theoretical introduction', *Capitalism Nature Socialism*, 1(1): 11-38.
- O'Connor, J. (1994) 'Is sustainable capitalism possible?', in P. Allen (ed.) *Food for the future: Conditions and contradictions of sustainability*. New York: Wiley-Interscience.
- O'Connor, M. (1994) 'On the misadventures of capitalist nature', in M. O'Connor (ed.) *Is capitalism sustainable?* New York: Guilford Press.
- Oels, A. (2005) 'Rendering climate change governable: From biopower to advanced liberal government?', *Journal of Environmental Policy & Planning*, 7: 185-207.
- Olsen, K.H. (2007) 'The Clean Development Mechanism's contribution to sustainable development: A review of the literature', *Climate Change*, 84: 59-73.
- Paterson, M. (2009) 'Resistance makes carbon markets', in S. Böhm and S. Dabhi (eds.) *Upsetting the offset: The political economy of carbon markets*. London: Mayfly Books.
- Peck, J, and A. Tickell. (2002) 'Neoliberalizing space', *Antipode*, 34: 380-404.
- Peck, J. (2010) *Constructions of neoliberal reason*. Oxford: Oxford University Press.
- Phelps, J., E.L. Webb and A. Agrawal, A. (2010) 'Does REDD+ threaten to recentralize forest governance?', *Science*, 328: 312-13.
- Robinson, C.H. (2008) 'Climate for Change', [http://www.aei.org/article/28609].
- Sandler, B. (1994) 'Grow or die: Marxist theories of capitalism and the environment', *Rethinking Marxism*, 7(2): 38-57.
- Smith, N. (2007) 'Nature as accumulation strategy', *Socialist Register*, January: 1-36.
- Stern, N., S. Peters, V. Bakhshi, A. Bowen, C. Cameron, S. Catovsky, D. Crane, S. Cruickshank, S. Dietz, and N. Edmonson (2006) *Stern review: The economics of climate change*. London: Her Majesty's Treasury.
- Stiglitz, J. (2008) 'The End of Neoliberalism?', *Project Syndicate*, 7 July [http://www.project-syndicate.org/commentary/stiglitz101]

- Sullivan, S. (2006) 'The elephant in the room? Problematising "new" (neoliberal) biodiversity conservation', *Forum for Development Studies*, 33(1):105-135.
- Sullivan, S. (2009) 'Green capitalism, and the cultural poverty of constructing nature as service provider', in S. Böhm and S. Dabhi (eds.) *Upsetting the offset: The political economy of carbon markets*. London: Mayfly Books.
- Sullivan, S. (forthcoming) 'Banking nature? The spectacular financialisation of environmental conservation', *Antipode*.
- Swyngedouw, E. (2005) 'Dispossessing H2O: The contested terrain of water privatization', *Capitalism Nature Socialism*, 16(1): 81- 98.
- Thompson, C. (2010) 'Disaster capitalism: Is the planet really warming up? Just ask the corporations that stand to make – or lose – billions due to 'climate exposure'', *Mother Jones*, 19 April.
- United States Commodities Futures Trading Commission (USCFCT) (2010) [<http://www.cftc.gov/newsroom/generalpressreleases/2009/pr5648-09.html>].
- Wallis, V. (2009) 'Beyond 'green capitalism'', *Monthly Review*, 61(9): 32-48.
- Weitzman, M.L. (2007) 'A review of the *Stern Review on the Economics of Climate Change*', *Journal of Economic Literature*, 45(3): 703-724.
- While, A., A.E.G Jonas and D. Gibbs (2009) 'From sustainable development to carbon control: Eco-State restructuring and the politics of urban and regional development', *Trans Inst Br Geogr*, NS 2009: 1-19.
- World Bank (2007) *State and trends in the carbon market 2007*. Washington, DC: World Bank.
- World Bank (2009) *State and trends in the carbon market 2009*. Washington, DC: World Bank.
- World Bank (2010) *State and trends in the carbon market 2010*. Washington, DC: World Bank.
- World Bank (2011) *State and trends in the carbon market 2011*. Washington, DC: World Bank.

the author

Robert Fletcher is Assistant Professor of Natural Resources and Sustainable Development at the United Nations-mandated University for Peace in Ciudad Colón, Costa Rica. His research interests include climate change, development, ecotourism, globalization, environmental governance, and resistance and social movements. He has conducted field research concerning these issues in Chile, Costa Rica, and the United States.

E-mail: rletcher@upeace.org