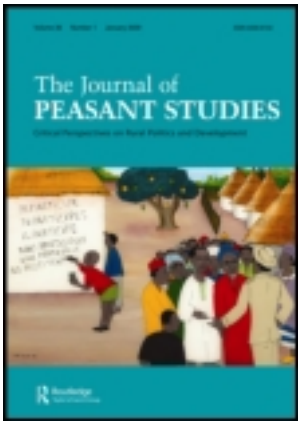

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Green Grabbing: a new appropriation of nature?

James Fairhead, Melissa Leach and Ian Scoones

Across the world, 'green grabbing' – the appropriation of land and resources for environmental ends – is an emerging process of deep and growing significance. The vigorous debate on 'land grabbing' already highlights instances where 'green' credentials are called upon to justify appropriations of land for food or fuel – as where large tracts of land are acquired not just for 'more efficient farming' or 'food security', but also to 'alleviate pressure on forests'. In other cases, however, environmental green agendas are the core drivers and goals of grabs – whether linked to biodiversity conservation, biocarbon sequestration, biofuels, ecosystem services, ecotourism or 'offsets' related to any and all of these. In some cases these involve the wholesale alienation of land, and in others the restructuring of rules and authority in the access, use and management of resources that may have profoundly alienating effects. Green grabbing builds on well-known histories of colonial and neo-colonial resource alienation in the name of the environment – whether for parks, forest reserves or to halt assumed destructive local practices. Yet it involves novel forms of valuation, commodification and markets for pieces and aspects of nature, and an extraordinary new range of actors and alliances – as pension funds and venture capitalists, commodity traders and consultants, GIS service providers and business entrepreneurs, ecotourism companies and the military, green activists and anxious consumers among others find once-unlikely common interests. This collection draws new theorisation together with cases from African, Asian and Latin American settings, and links critical studies of nature with critical agrarian studies, to ask: To what extent and in what ways do 'green grabs' constitute new forms of appropriation of nature? How and when do circulations of green capital become manifest in actual appropriations on the ground – through what political and discursive dynamics? What are the implications for ecologies, landscapes and livelihoods? And who is gaining and who is losing – how are agrarian social relations, rights and authority being restructured, and in whose interests?

Keywords: Green grabbing, nature, ecology, commodification, appropriation

This collection includes papers first presented at the International Conference on Global Land Grabbing organised by the Land Deal Politics Initiative (LDPI) in collaboration with the *Journal of Peasant Studies* and hosted by the Future Agricultures Consortium at the Institute of Development Studies, University of Sussex, on 6–8 April 2011 (www.future-agricultures.org/land-grab.html). A number of the authors were supported by the LDPI small grants fund (www.iss.nl/ldpi). We would also like to acknowledge the support of the ESRC STEPS Centre (www.steps-centre.org) and its 'political ecologies of carbon' project.

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Introduction

Across the world, ecosystems are for sale. The commodification[1] of nature, and its appropriation by a wide group of players, for a range of uses – current, future and speculative – in the name of 'sustainability', 'conservation' or 'green' values is accelerating. For example, supporters of the Nature Conservancy and the African Wildlife Foundation are invited to 'adopt an acre' – or perhaps 50 acres for USD 1750 – in order to protect valuable wildlife heritage from human-induced degradation[2] (Nature Conservancy 2011, African Wildlife Foundation 2011). The web portal 'Ecosystem Marketplace' offers information updates and investment and price trend data on carbon, water and biodiversity markets. The website states 'We believe that . . .markets for ecosystem services will one day become a fundamental part of our economic system, helping give value to environmental services that, for too long, have been taken for granted'. The aim of the information portal is to 'spur the development of new markets' and 'facilitate transactions'[3] (Ecosystem Market Place 2011). Meanwhile in Mozambique, a company with British capital negotiates a lease with the government for 15 million hectares (ha) or 19 percent of the country's surface. Its interest is in the carbon stocks represented by the trees that can be grown on that land, and traded in emerging carbon markets (Nhantumbo 2011, 1).

These are all examples of the phenomenon captured within *Guardian* journalist John Vidal's brutal term, 'green grabbing' (Vidal 2008). Green grabbing – the appropriation of land and resources for environmental ends – is an emerging process of deep and growing significance. 'Appropriation' implies the transfer of ownership, use rights and control over resources that were once publicly or privately owned – or not even the subject of ownership – from the poor (or everyone including the poor) into the hands of the powerful. It is an emotive term because it involves injustice; it is what Robin Hood objected to. Appropriation is central to the dual, related processes of accumulation and dispossession. This can be simple capital accumulation, in which profits accruing to capital are reinvested, increasing capital and the concentration of its ownership. Or it can be primitive accumulation, in which a more publicly owned nature is enclosed into private ownership, and existing claimants are expelled (or have rights attenuated) to become a proletariat separated from land and nature, releasing resources for private capital (DeAngelis 2001, Glassman 2006, Kelly 2011).

Green grabbing can be understood as part of the vigorous debate on 'land grabbing' more generally, a debate which already highlights instances where 'green' credentials are called upon to justify appropriations of land for food or fuel (Borras *et al.* 2010, 2011, 2012, under review). Thus large tracts of land are acquired not just for commercial farming, but for 'more efficient farming to alleviate pressure on

[1]While acknowledging that there is often overlapping usage of 'commodification' and 'commoditisation' to refer to the processes we discuss, in this article we retain the term commodification, originating in Marxist political theory, to describe these fundamental transformations of value, and restrict the use of the term commoditisation, originating in business theory, to situations where such re-valued goods are treated as simple commodities traded in markets.

[2]'Adopt an Acre in East Africa with The Nature Conservancy' available from: http://adopt.nature.org/acre/africa/ and 'Adopt African Acres', African Wildlife Foundation, available from: http://adopt.awf.org/store/c/402-Adopt-African-Acres.aspx (both accessed 31 October 2011).

[3]See http://www.ecosystemmarketplace.com/ (accessed 31 October 2011).

forests'. The massive expansion of palm oil plantations is not just for commercial biofuel, but for carbon-neutral fuel. Such instances certainly represent discursive extensions of what we are calling green grabs, but here we use the term to focus on instances where environmental agendas are the core drivers. The commercial deal is thus intended to serve 'green' ends – whether through biodiversity conservation, biocarbon sequestration, the protection of ecosystem services, ecotourism or 'offsets' related to any and all of these. In the process, notions of 'green' (and what, and who, is green or not) come to be defined and mobilised in particular ways. While grabbing for green ends does not always involve the wholesale alienation of land from existing claimants, it does involve the restructuring of rules and authority over the access, use and management of resources, in related labour relations, and in human-ecological relationships, that may have profoundly alienating effects.

This collection draws together a range of such environmentally-driven cases. They address local and national settings in East, West and Southern Africa, Southeast Asia, and Latin America, and ecologies that range from lowlands to highlands, from humid forests to drylands, and from farmscapes to pastoral and wildlife-rich zones. The cases reveal the extraordinary variety of actors who have become involved: pension funds and venture capitalists, commodity traders and consultants, brokers and aggregators, GIS (geographic information system) service providers and technology procurers, business entrepreneurs and salespeople, green activists and anxious consumers, as well as NGOs and state agencies. All now interact in an array of relationships that link across local and global scales. New forms of coalition and alliance are emerging between what might once have seemed unlikely bedfellows: businesses and NGOs, conservationists and mining industries, or ecotourism companies and the military, to mention but a few identified in the papers that follow.

This collection seeks to analyse the world of these actors, the processes they are involved in, and their effects. By drawing on a diversity of fine-grained empirical cases and relating these to a wider examination of the political, economic and discursive processes underlying the appropriation of nature, and the implications for agrarian change, we ask: what is new? Are contemporary modes of appropriation of land and resources for apparently green ends extensions of processes that have long operated, or are they in some sense qualitatively different? The phenomenon we are terming 'green grabbing' certainly builds on long and well-known histories of colonial and neo-colonial resource alienation in the name of the environment – whether for parks, forest reserves or to halt assumed destructive local practices (Peluso 1992, Neumann 1998, West *et al.* 2006, Adams and Hutton 2007). Yet there is also something quite new afoot, in terms of the actors, as well as the cultural and economic logics and political dynamics involved. In the twentieth century era of 'national parks and protected areas' there always were more interested parties than the state and conservation organisations – the scientific community and tourist industry for example – but today there are many more players implicated, who are more deeply embedded in capitalist networks, and operating across scales, with profound implications for resource control and access.

'Green' and economy: material and discursive transformations

Before turning more directly to an exploration of new modes of appropriating nature, a note is needed on our analytical scope. We would not be the first to notice that contradictions have emerged between the rapidly growing global economy and

the earth's resources. If the green movement has transformed, it is in response to this contradiction: it has stepped from the critical margins to hold centre stage in an advocacy of a new global 'green economy', firmly located in capitalist networks (UNEP 2011), and as part of a vision of 'ecological modernization' where economic growth and environmental conservation work in tandem (Mol and Spaargarden 2000). Things green have become big business and an integral part of the mainstream growth economy. So if, in the twentieth century, the 'green movement' could be depended on as a critical voice and an antagonist with 'industry', countering the ravages of capitalist expansion and voracious economic growth, this is increasingly difficult to uphold. Whilst in the twentieth century, conservation agendas were surely implicated in the alienation of land and the regulation of land use by colonial and post-colonial regimes, this was often not with commercial intent (though it often had commercial effects) (MacKenzie 1988, Adams 2004). Now it is explicitly so.

Part of this transformation is associated with the 'neoliberal turn' and the neoliberalization of environmental arenas of governance (Peck and Tickell 2002, Larner 2003, Castree 2003, 2008a, 2008b, McCarthy and Prudham 2004, Robbins and Luginbuhl 2005, Liverman and Vilas 2006), as well as the privatisation and commoditization of nature (Mansfield 2004, 2008, Bakker 2005, 2009, Heynen and Robbins 2005, Heynen *et al*. 2007). As Castree (2008a, 143) has noted, neoliberalism is necessarily an environmental project with 'the non-human world as a key part of its rationale'. Of course nature, economy and society have never been separate and distinct, but instead are mutually constituted as socio-natural entities (Mansfield 2008, Smith 2008). Equally, the socio-cultural dimensions of commodities 'as vectors of social relations and cultural identities and as a means of interrogating practice of production, consumption and material culture' have been emphasised in recent work (Bakker 2005, 542, Robertson 2007). Drawing on these understandings, and inspired in particular by much older theoretical insights from Marx, Polanyi, Gramsci and others, in recent years there has been a veritable explosion of scholarship examining the neoliberalization of environments, nature and conservation, styled recently as 'Nature TM Inc.'[4], but also drawing on older traditions of ecological/green Marxism (Benton 1996, O'Connor 1998) and critical political ecology (Peet and Watts 1996). The papers in this collection are indebted to this work, but hopefully also move beyond it, locating the discussions in a particular concern for the implications of changing agrarian relations resulting from these multiple and diverse appropriations of nature. For this, the insights of critical agrarian studies, and attention to

[4]Various conferences, journal special issues and academic reviews have emerged (see for example, *Geoforum* on 'Neoliberal nature and the nature of neoliberalism' (McCarthy and Prudham 2004); *Capitalism, Nature, Socialism* on 'The Neoliberalization of Nature: Governance, Privatization, Enclosure and Valuation' (Heynen and Robbins 2005); *Conservation and Society* on Neoliberal Conservation (Igoe and Brockington 2007); *Antipode* on Capitalism and Conservation (Brockington and Duffy 2010); *Development and Change* on 'Neoliberal Market Mechanisms in Environmental and Conservation' (Arsel and Buscher 2012). Most recently, the Nature TM Inc. conference at the Institute of Social Studies in June 2011 brought together many of these scholars reported in Arsel and Büscher 2012. Castree (2010a, 2010b, 2010c, 2011) offers useful overviews on this growing body of literature, particularly from critical geographers, and suggests an overarching framework identifying seven features of the neoliberalization of nature, including privatization, deregulation, market-friendly re-regulation, the use of market proxies by governments, the encouragement and facilitation of civil society support, and the construction of individualized, market-compliant individuals and communities.

the complexities of empirical contexts – and their 'uneven geographies' – is vitally important. Some of the critical literature on neoliberalizing nature adopts a rather uniform position, assuming a singular hegemonic project, failing sometimes to analyse the consequences for diverse, differentiated and contingent settings (Bakker 2009). Perhaps, as Castree (2010c, 2011) suggests, this is because some commentators become blinded by homogenising assumptions about the nature of neoliberalism, as well as showing a lack of analytical clarity about the underlying processes involved. In this collection we are led by the empirical particularities of diverse cases, and attempt to draw some wider insights into the complex relationships between the processes of 'green grabbing' and agrarian change in the context of diverse forms of neoliberalism.

As the contradiction between the global economy and the global environment becomes more apparent, nature is becoming increasingly valuable: a source of profit. Analysis of this contemporary materiality and the political economic relations co-produced with it must therefore be central to any consideration of green grabbing (McMichael 2009, 2012). The basic questions of agrarian political economy are as relevant as ever: Who owns what? Who does what? Who gets what? And what do they do with the surplus wealth that has been created? (Bernstein 2010). Indeed such questions are accentuated, we argue, as nature and ecosystems become valued in new and multiple ways. As Moore (2000) argues, every phase of capitalism emerges from a restructuring of nature-society relations. At the same time, the new value of nature is clearly also associated with the global discourses that have been attributing value to it, making an analysis of discursive framing critical too. There would be no carbon-trading without the science-policy discourses that have discerned global warming (Newell and Patterson 2010). There would be no enclosures for biodiversity without the scientific and discursive processes that identified its global significance and threatened status (Corson and MacDonald 2012). There would be no 'payments for ecosystem services' (PES) without the particular framing of late-twentieth century global environmental problems by the Millennium Ecosystem Assessment (2005), the science-policy assessment that spawned the PES concept (Corbera *et al*. 2007, Redford and Adams 2009, Nature 2009, McAfee and Shapiro 2010, Kosoy and Corbera 2010). Most of the emerging 'green markets' implicated in green grabbing are trading in such 'discursive commodities', as well as influencing material political-economic conditions on the ground.

A key analytical line pursued in this collection is therefore to explore the relationship between the science-policy world that establishes these commodities and the operation of markets, and their tangible effects on agrarian settings. Thus science-policy discourses have produced carbon as a commodity, shaped forests as 'otherwise disappearing', given value to biodiversity and cast biofuels as sustainable. These moves in turn suggest a Foucauldian knowledge/power relation in the production of scarcity (Mehta 2011), loss (Fairhead and Leach 2003) and repair (Leach *et al*. 2012). Markets in these discursive commodities have therefore emerged from complex encounters between science, technology and politics, and it is the interactions between such discursive and political-economic relations that must be at the centre of any analysis.

It is, we think, easy to discern one fundamental recent change in the structure of economy-nature relations. In the twentieth century, environment and nature were valued for what they offered: either for resources or for the 'conservation' and

'sustainable use' of resources. The twentieth century lexicon was of conservation and sustainability. Now, crucially, green grabs reflect the value of what we might call 'the economy of repair' as well (see also Leach *et al.* 2012). It is the repair of a damaged nature, and efforts to price the downside of growth, that have brought into being and enhanced the value of commodities such as carbon, biofuels and offsets of all kinds (whether biodiversity, species or climate). The economy of repair has been smuggled in within the rubric of 'sustainability', but its logic is clear: that unsustainable use 'here' can be repaired by sustainable practices 'there', with one nature subordinated to the other. Once this logic of repair is grasped, so a new interplay can be discerned which is doubly valuing nature: for its use and for its repair. The damage inflicted by economic growth generating unsustainable resource thus creates the basis for the new growth economy of repair. Nature serves both – and thus acquires value; some would say its 'true', full value.

Mercantile optimists had perhaps thought creating markets for repair – pricing carbon, offsets and so on – might put a brake on growth and tame this dialectic; as McAfee (1999) eloquently put it, that nature might be sold to save it. But things do not seem to be working out that way. Prices are settling in such a way as to maximise both economies – of growth and of repair – with the intent of getting the very most out of nature and with maximum efficiency. Why should it be different? A major consequence, however, is to attribute ever more value to land, sea and air. Yet nature already has its custodians – whether held by us all (for the air we breathe, for instance); by states holding these 'assets' on behalf of their people; or by those who have legitimate private rights of ownership, control or use. An analysis of green grabbing, put simply, has to examine the discursive and material articulation of this emerging economy-nature-discourse configuration with nature's existing custodians, and to focus on the new modes and consequences of appropriation.

In this collection we consider the ethnography of such articulation, in an effort to discern what is going on, how human-ecological interactions and agrarian social-economic relations, rights and authority are being restructured, and in whose interests. But to contextualise and inform such analysis, we also need to reflect on the global forces shaping these articulations. Thus in the rest of this paper we first review the emergent forms and dynamics of the commodification of nature under 'green' capitalism. We consider in turn what this means for the current forms, logics and mechanisms that enable appropriation. Then we consider exactly how these mechanisms translate into the alienation of land and resource rights on the ground, and the implications this has for the lives and livelihoods of land and resource owners and users. As we show, the workings of new markets can be curiously dislocated from – or not experienced directly by – those whose lands and resources are traded. To understand how this relationship unfolds we must therefore attend both to the nature of these markets and to how they play into regionally or locally specific histories of land use and governance, and the disciplining effects of these processes on peasants and agrarian relations. Finally, we address emergent limits to the universalized triumph of green grabbing: whether in its inherent contradictions as market logics meet the disturbing turbulence thrown up by an unruly, non-equilibrium nature, or in the inherent political and social contradictions that generate social and political resistance.

So in sum, in discerning 'what is new', and in analysing the logics and operations enabling and enacting green grabs, we need to consider three dimensions: the emerging economic order, the emerging discursive order and the emerging material

order. In this paper, and in the collection as a whole, we show the significance of each of these, as well as the relationships between them in a range of different cases. We hope the end result will be a more complete conceptualisation, as well as an empirical grounding, of the fast-emerging phenomenon of 'green grabbing'.

Appropriation, dispossession and the valuation of nature

The term 'grabbing' focuses on appropriation, which has long been the subject of analysis in political economy, and in particular of Marxist theorisation of 'primitive accumulation' (Banaji 1973). Working in this tradition, David Harvey (2003, 2005, 2006) has developed an analytical lexicon around the concept of 'accumulation by dispossession' – 'the enclosure of public assets by private interests for profit, resulting in greater social inequity' (Bakker 2005, 543) – which he argues represents the continuation and proliferation of accumulation practices under neoliberalism. He examines contemporary class-based processes in which ownership of capital (assets of value) become concentrated (accumulated) in the hands of those already holding capital. Looking widely around the current economic order to identify what processes lead to this concentration, he finds a complex interplay of four main processes: 'privatization', 'financialization', 'the management and manipulation of crises', and 'state redistributions', whereby the neo-liberal state favours capitalist business interests over others, for example through the tax system. Each of these dimensions is important in understanding green grabbing, and offers a starting point in elaborating its logics and processes. As Smith (2008, 33) notes, 'capital is no longer content simply to plunder an available nature, but rather increasingly moves to produce an inherently social nature as the basis of new sectors of production and accumulation'. We consider each of Harvey's four key dimensions of neoliberalism here in turn in order to foreground the interaction between them, and draw out the implications for 'green grabbing' in particular.

Privatization concerns two distinct processes. First, it involves the privatization of public assets from the state to private companies. For example, states once held nature in trust for the people they represent, but now privatize and sell it as stock to private companies. We see this, for instance, in the sale of grazing land to foreign wildlife and ecotourism companies (Brockington *et al*. 2008, Snijders 2012, Gardner 2012; see also Duffy 2000, 2010), and of farm and forest land to mining companies (Seagle 2012). To be sure, privatization can also involve the securing of ownership rights for the poor; but, as Harvey notes, even when this happens it is not the end of it, but rather opens the way for subsequent processes of alienation of land and nature. This can happen through simply dispossessing private owners by violent appropriation; delegitimizing claims through legislation; or most importantly, dispossession 'through the market', whereby those who have valuable assets, but are earning incomes too low to permit social reproduction, inevitably have to sell them. As we indicate later, cases in this issue illustrate all of these processes in operation.

Financialization refers to how the financial system itself has becomes a centre of redistributive activity, drawing into financial circulation aspects of life that previously lay outside it. How nature is being linked to a tradeable, financialized world is the subject of a growing array of scholarship (Sullivan 2011a, 2011b, Igoe *et al*. 2010, Buscher 2011), illuminating how, for example, financialization is a critical precondition for the emergence and operation of green offset and other markets. Such processes have their roots in the apparently uncontroversial desire to ensure

that nature is properly valued. From the 1980s, environmental economists attempted to articulate the very real financial value of the assorted direct and indirect products and 'services' that environments afford (Warford and Pearce 2003). For example, in the case of forests such valuations moved from timber and non-timber forest products, to services of hydrological cycles, soil systems and biological diversity to a range of other values including recreational use, cultural and 'existence' values (Pagiola *et al.* 2002, 2004, Sheil and Wunder 2002). It is the same impulse which has put a value on carbon. Of late, this has developed into the (e)valuation of all ecosystem services (Constanza *et al.* 1997), leading to the evolution of payment for ecosystem services (PES) schemes (Robertson 2004, McAfee 2011). Whilst the original motivation focused on garnering policy support for resource conservation by demonstrating extensive economic value, it has transformed into an approach which seeks payment for services, on the assumption that such remuneration will ensure their provision. This creates a market for different elements of valued ecosystems, which in turn creates the opportunities for financialization (Sullivan 2011), creating in turn 'fictitious conservation' intimately linked to the circulation of capital in new economic systems (Buscher 2011).

This process is intimately associated with a new conceptualisation of nature. Ideas, values and practices involving nature and ecology are being reconfigured, co-produced by science in this unfolding economic and policy order, and institutionalized by powerful organizations, whether the World Bank, international conservation NGOs or the Convention on Biodiversity (McAfee 1999, Goldman 2001, Bakker 2009, Corson 2010). Thus ontologies of ecology are being replaced by those of 'natural capital' and 'ecosystem services' (Corson and MacDonald 2012). In what Brockington *et al.* (2008, 188) refer to as a 'green box of consumptive nature', animals, landscapes and ecosystem processes appear, as if by magic, divorced from the historic-ecological processes that gave rise to them. Conceptualisations of ecological and human-ecological relationships, and of interconnectedness in systems, give way to the notion that their components, facets and attributes can be separated as ecosystem 'services' and so sold: not just resources for provisioning, but also their regulating and even aesthetic dimensions. Thus the 'green gaze' valuing a tropical forest now sees deep down to its underground potential for carbon storage, its solar absorption, its soil and water as a potential for biofuel production (palm oil, sugar and *Jatropha*), its trees as a source of REDD (Reduced Emissions from Deforestation and Degradation) funding (perhaps doubling as a potential source of sustainable biochar), and its biodiversity as a source of global conservation funding or tourism revenue. New 'green' markets multiply and enhance the financial value of nature, and deal in and speculate on these new values (McAfee 2011). Environments thus become business assets, cash cows producing dependable incomes from the services they provide. Logic might suggest that this would inevitably value the ecosystem over and above the sum of its parts. And yet that is just what employees often think of the viable businesses they work for when they are sold – before they are asset-stripped. The perversities of the financialized world are legion, and once there are markets for nature's assets, so nature's assets can be stripped.

These new valuations also bring new spatializations of nature, and new potentials for inequality. Market transactions are sometimes dislocated from the materiality of their local geography. What is traded may be linked to grounded places and territories, but may refer to their images on satellite images and GIS maps (Nalepa and Bauer 2012), and sometimes to more generic but unspecified areas. These

promise specific values, but may not, as yet or perhaps ever, be linked to any place at all (Bridge 2001). A crucial dimension of such dislocation is the concept of equivalence: that a ton of carbon anywhere is somehow the same. Such equivalence permits the operation of carbon offset markets, just as the idea that a long-tailed newt anywhere is worth the same drives a species offset market. Such commensurations of value, co-produced by science and policy, are essential to enable trading (Lohmann 2009). They signal not just an idea of nature, but an entire philosophy of nature co-produced with a new 'green' economy. In this vision, nature must pay its way. It must produce the value that keeps it afloat. It must create water, air and other taxes for 'ecosystem services' competitively or go under to be replaced by nature somewhere else that produces such products and services more efficiently. Green trading – whether in ecosystem services or offsets – thus relies on and reproduces the conventional economic notion of differential opportunity costs; that contributions to the repair of the global environment should be sought where this is cheapest, or where what is foregone costs less. Yet, as McAfee (2011) points out, this crucially depends upon and reinforces inequalities between poorer and wealthier landholders, between urban and rural areas, and between the global South and North. Despite policy rhetoric to the contrary, there are inevitably inherent contradictions between the commodification and market-based management of nature, and development and poverty reduction goals (McAfee 2011, Bohm and Dabhi 2009).

The third dimension to Harvey's characterisation of the forces driving 'accumulation by dispossession', and which can be seen to be driving the dispossessions involved in green grabs, is the construction and perpetuation of a sense of crisis. Global environmental and economic crises interlock and feed off each other in a playing out of 'disaster capitalism' (Sullivan 2010, Klein 2007). Not only has nature been drawn into financialized markets, but these markets are themselves locked into a wider financial world prone to boom and bust and other crises, which, as Harvey notes, work towards accumulation by some and dispossession of others. Harvey correctly identifies the plight of indebted nations, for example. Indebted governments are extremely vulnerable when they face bankruptcy and can be forced by international financial institutions to agree to policies requiring the liberalization of markets and the privatization of public assets, as happened in the decades of imposed structural adjustment policies from the 1980s across the global South. As Harvey observes, decades of easy loans and increasing indebtedness are often quickly followed by a political economy of dispossession. This is a logic that also impinges on the valuation of nature: this becomes a valuable asset which not only can be, but must be, sold.

Harvey's fourth and final process concerns the changing role of the state in influencing the redistribution of wealth between actors. Fiscal policies, he argues, are designed to favour investment, and thus those with the capital to invest, rather than incomes and security for the poor. National and international investors are encouraged by state policies which make available assets, including land and other marketable resources. For states with limited fiscal resources, especially in the developing world, the incentives for such redistributions towards investors are large. To enable this, policies are driven through which encourage the leasing of land, as well as schemes which generate payments for environmental resources: for land, water, biodiversity and carbon, among other natural assets. Market-friendly policies of the international financial institutions, such as the World Bank and its investment arm, the International Finance Corporation, provide finance, insurance, advice and

support to facilitate such processes (Daniel 2012). Investors attracted by such policies come in many shapes and forms. While some investors are working with short-term ends in mind, others have longer time horizons. For example, in the current context those seeking land include countries which require food or fuel, but have limited land and water resources, or those whose economic growth trajectories generate a massive demand for commodities, creating a particular 'geo-economics' (Cotula 2012). Many such countries, whether from Asia or the Middle East, have the ability and the motivation to strategise for the long term, looking far ahead to future demand and market opportunities (Cotula *et al.* 2009, Zoomers 2010). Much investment is thus based on speculation, around prospective markets, future expectations and long-run prices and demand patterns. In this respect, we may be seeing only the beginning of green grabs, and the start of intensified patterns of investment across the world by a growing diversity of players, incentivized by redistributive investment policies characteristic of the neoliberal era.

A crucial dimension to these dual processes of accumulation and dispossession, which consolidate 'capital', is the way that those implicated in the accumulation of value are also those implicated in the attribution of value itself. Indeed, a peculiar feature of the financialized modern economy is that the value of the commodity is constructed and co-produced within the architecture of its financialization – in interaction with the international institutions apparently governing them and the policies of the state. Sociologists have observed this, for instance, in financial derivatives markets (MacKenzie *et al.* 2007), but new green markets also offer perfect exemplars (Sullivan 2011). Those exerting power over the markets thus play them with loaded dice.

In this way, those working in the carbon-offset market lobby for increased global valuation of carbon and must sustain the idea that a ton of carbon is simply a ton of carbon (Lohmann 2009). So those advocating for financial flows to follow REDD projects, or biochar sequestration interventions, must make the case for carbon equivalence the world over in climate mitigation policy (Leach *et al.* 2012). Equally, those working in the species offset market must sustain the idea that one animal in one place is of the same value as in another, or indeed, might be tradable with others of the same species (Sullivan 2011). And those working in conservation of protected areas must lobby for the full value of their 'ecosystem services' to be appreciated and paid for. In all of these efforts, the scientific community is drawn into the market fray, generating evidence to assert value in new markets for nature, fundamentally affecting resource control and access where such markets apply. In some cases, such as biochar, the market hype outpaces the scientific evidence. Markets operate on the speculatory promise of science, not its findings (Leach *et al.* 2012). Technology expectations therefore march ahead of technological realities, but provide the basis for raising funding, and the assertion of value (cf. Nightingale and Martin 2004). The argument is not that the science co-produced within this new economy of nature is necessarily 'wrong' (although it clearly bears this economy's conceptual imprint and framing), but that it is through this financial-scientific-policy nexus that nature comes to acquire its economic value. It is therefore hardly surprising that this same nexus is able to capture that value.

Such new forms of green commodity have their value constructed and sustained through popular imagery and representations. In the news media, in advertising brochures or through internet campaigns, images urge tourists to visit eco-destinations or offset their high-consumption lifestyles, for example. Nature is thus

commodified at least partly through a virtual spectacle, in self-referential cycles that circulate through the global consumer economy (Igoe *et al*. 2010, Brockington 2009). Yet many green markets operate in ways far from a pure, idealised market perfection. Many are wholly divorced from the reality to which they refer – based on economies of speculation and expectation and rooted in particular social and political relationships. They are therefore 'real markets' (de Alcantara 1992), socially 'instituted' in Polanyi's (1944) original sense. Many are markets only in name: they are more akin to social and political deals, with economic transactions embedded in contested politics, social relations and cultural imagery. In the way that these political deals are constructed, green markets are often monopolistic or oligopolistic, involving highly collusive behaviour. A 'stakeholder roundtable' or a 'conference of the parties' might thus be redefined as a cartel, involving insiders with privileged knowledge about current and future value. But notably, these are also cartels which, like de Beers and the diamond trade, create the value of the very commodities they trade, through a combination of carefully controlled institutional processes and often spectacular imagery and cultural representations.

The capture and distribution of value can be observed in the value chains involving commoditised pieces of nature, just as one can see in the operation of the diamond market. Just how much of the money due to the capture of a ton of carbon in a REDD+ scheme, for instance, goes to the communities responsible for looking after the trees? How much, by contrast, is captured by those who prospect for, evaluate and assess or trade the commodity? Even where 'local benefits' are prescribed from forest, ecotourism or wildlife schemes, what portion of the now huge profits to be made filter down to those at the far end of the chain? Who are the winners and losers in these new green commodity chains? In several of the cases in this issue, the distribution of value is highly skewed, with local beneficiaries receiving often vanishingly small benefits from newly commoditised, traded nature (Snijder 2012, Benjaminsen and Bryceson 2012).

Enacting green grabs: histories, actors and political dynamics

While asking 'what is new?' we should also ask 'what is the same?' Certainly, nature and its values are being constructed, defined and claimed in new ways; however, when one examines how this translates into material appropriations, whereby land or resources are removed from the control of their prior users, or access and use rights are limited, clear continuities emerge. Many of the themes long explored in critical agrarian studies – of tenure, labour, markets, and rural differentiation – appear, often writ large. Yet the articulation of the processes outlined above is not a simple or straightforward translation. As we have discussed, contemporary green valuations, circulations and commodifications, along with associated business and market logics, are being shaped in global fora, media and actor-networks that are sometimes virtual and often dislocated and distanced from the places they govern. We must therefore ask: when, how and through what processes do these emergent possibilities of green grabbing become manifest in material appropriations of nature on the ground? How do globalised green grabbing possibilities become localized? What forms do these take, and who gains and who loses?

For who gains and who loses is not always clear-cut, and is highly dependent on particular contexts. Processes of accumulation, for example, do not inevitably lead to dispossession. Not everyone ends up disciplined as neoliberal subjects. And nature

is not always appropriated by the powerful (cf. Castree 2010c). For example, local communities may be able to reassert rights over land and resources in alliance with external investors, and in opposition to a retreating state. Sikor and Lund (2009a, 2009b) identify a particular 'politics of possession' which influences who gains access to land and resources, and how, in particular instances, which does not necessarily result in capture by outsiders (e.g. Mansfield 2007 for fisheries and McCarthy 2006 for community forestry). The diminishing of state power under neoliberalism may also open up opportunities for civic action, protest and resistance, and the assertion of rights by indigenous rights or environmental justice groups (e.g. Holifield 2004, Perreault 2006).

As Castree (2011) observes there is 'often a large gap between neoliberal theory and practice', with understandings of key processes of commodification, privatization, commercialization and marketization often conflated. The neoliberal state is seen to work both 'inside' and 'outside' the economy, negotiating across multiple interests. This may involve the seemingly contradictory processes of active intervention and regulation, and privatization and deregulation, operating simultaneously (Castree 2011), whereby the state acts to open up the possibilities for privatization and appropriation through regulation. Understanding what happens where and why therefore requires a strong, comparative empirical focus, with a detailed understanding of political processes operating across scales. The outcomes of 'green grabbing' are fundamentally constituted by the contexts within which it takes place.

In order to respond to this challenge, we can usefully draw from and build on recent vibrant analysis of land and resource access and control, and its contemporary dynamics, as well as a long tradition in critical studies of agrarian change, rural politics and development. For example, Peluso and Lund (2011) highlight how new frontiers of land control are being actively created through processes of enclosure, territorialization, legalization, and violence; each dimensions of Harvey's neo-liberal logic of privatization. Regimes of authority and rights are being constructed in complex interactions, and through networks of state, local and foreign actors, that are drawing on (and contesting) earlier forms of control. In the Southeast Asian context, Hall *et al.* (2010) focus on the political processes that enable exclusion of certain land uses and users, highlighting the importance of regulation, markets, force and legitimation. In these and other recent works – perhaps especially the growing body of work on 'land grabs'[5] – the operation of discursive as well as structural power is evident, and history and context matter deeply – shaping the ways that political dynamics, and hence transformations in land and resource control, unfold. Our argument too is that green grabbing operates through such place-specific processes – but in ways that are enabled, structured and shaped by the neo-liberal logics of commodification and appropriation outlined above.

To understand how green grabbing unfolds in particular places, then, we must attend to both the nature of new political economies and discourses around nature, and how they play into regionally or locally specific histories of environments, land use, governance and agrarian relations. Central to these histories is the array of prior enclosures and forms of territorialization that states and their supporters were able to justify and enact, whether on environmental or economic grounds, in the past.

[5]See *inter alia* Borras *et al.* (2010, 2011, 2012, under review), Borras and Franco (2010), de Schutter (2011), Li (2011).

Thus the colonial creation of forest reserves and parks in Africa, the construction of state-sponsored plantations and timber reserves in Southeast Asia, and the series of dramatic enclosures that have affected South America's rural history have all, in different ways, involved removing local inhabitants, or drastically curtailing their land and resource use rights and practices, in the interests of a greater national or global good (West *et al*. 2006, Brockington *et al*. 2008). In the process, both the idea and the possibility of local exclusion, and means for enacting it, were laid down in the legislation on land, parks and tree tenure, and in the powers and practices of the militarized agents who implemented it. Such practices and possibilities were often co-produced with discourses of environmental degradation caused by local farming and land use practices. The discursive gaze and institutionalized practices of colonial science and administration often went hand-in-hand to construct peasants as environmental destroyers, justifying their removal, restriction or re-education (Leach and Mearns 1996, Beinart and McGregor 2003, Adams 2004). The environmental protection and conservation schemes of the 1970s and 80s, though often enwrapped with 'development' and 'community participation' rhetoric and provisions, built on such legacies (Li 2002, Brosius *et al*. 2005). Myriad policy and tenure reforms across forestry, agriculture, wildlife and mining have adapted but rarely undone such historical legacies; more common has been the accretion of layers of regulation and policy, creating uncertainties, as well as opportunities for the play of power.

Albeit taking different forms in different places, then, rural people have been left in a pervasive condition of vulnerability – their land and resources remaining open to appropriation by others for environmental ends. Historically-embedded processes have left lasting legacies in rural governmentality (understood as the 'the art of government', or the 'conduct of conduct' (Foucault 1991)), creating what has been called 'green governmentality' (Luke 1997) and 'environmentality' (Agrawal 2005), whereby 'the environment' is constructed in relation to the exercise of power and control. This enables rural people to be demeaned and displaced as resource custodians, as described by Odeja (2012) in the context of eco-tourism projects in Colombia. These long-run historical processes, we argue, provide a vital set of conditions of possibility into which those seeking to profit from the new commoditization of nature have been able to step. In turn, we see contemporary 'green' schemes reproducing, but also creatively transforming, such older processes of appropriation. As the contributions which follow repeatedly highlight, such contemporary dynamics of appropriation of nature involve new (re)configurations of actors and relationships; the reinvention of of legal and market processes and the construction of novel justificatory discourses, casting local people as either environmental custodians or destroyers, that interplay with but also depart from conventional class dynamics.

The contemporary configurations of actors involved in 'green grabbing' are highly varied, drawing state agencies and national elites into new relationships with a variety of private actors. Thus we see conservation schemes being enacted through tight alliances of international environmental policy institutions, NGOs and national elites with multi-national corporations, whether in those orchestrated by Rio Tinto in Madagascar that blur boundaries between land acquisition for environmental protection and mineral extraction (Seagle 2012) or in the alignments of international tourist operators with conservation agencies and the state in promoting ecotourism schemes in Colombia (Odeja 2012), Tanzania (Gardner 2012) or South Africa

(Snijders 2012). We see new and forceful alignments of military and paramilitary agencies with conservation professionals, in cases where waging war on environmental degradation aligns neatly with other battles – to cleanse territories of drugs (Ybarra 2012) or disruptive social or ethnic groups (Cárdenas 2012). The identities of local people in relation to green schemes become critical, with class, race/ethnicity, gender and regional origin defining people's position in relation to new business ventures (Odeja 2012, Cárdenas 2012). In other cases, key actors are business entrepreneurs seeking to profit from new waves of green capitalism. These range from private wildlife operators (Gardner 2012, Benjaminsen and Bryceson 2012) to companies developing forest carbon offset projects (Tienhaara 2012), biochar companies (Leach *et al.* 2012) or pharmaceutical firms (Neimark 2012). In different ways, all are presenting themselves as 'green', and engaging in diverse ways with local elites, national and international NGOs and diverse state actors to secure land and resources for their investments.

In such contexts, a new range of intermediary actors is emerging as critical go-betweens to secure and enable resource appropriations. Some of these are consultancy and advice firms, blossoming on and profiting from the technical complexities of constructing and negotiating green deals – whether GIS companies involved in constructing and pinpointing 'marginal lands' for investment (Nalepa and Bauer 2012), or consultants specializing in the carbon stock measurements and scenarios needed to construct REDD+ and carbon offset projects (Corbera and Schroeder 2010), or in the calculations required to create and implement biodiversity offset or payment for environmental services projects (Robertson 2004). Others are the agents appointed by companies to negotiate land and resource deals with local communities. Sometimes drawn from local elites, sometimes outsiders, the cases here only begin to document the complexities of allegiance, accountability and entanglements in local politics involved in these relationships. While development actors try to identify the 'pro-poor', 'benefit-sharing', 'win-win' opportunities for such schemes (Angelsen 2008, Cotula and Mayers 2009, Lawlor *et al.* 2010, Peskett 2011, Peskett and Brodnig 2011), it is the local political dynamics that define winners and losers.

The processes through which green grabs are actually negotiated take particular forms, shaped by their green logics and possibilities and by the historical-political contexts and agrarian settings they interplay with. Thus Tienhaara (2012) explores the negotiation of carbon concessions across four cases from Africa and the role of particular legal-market processes in the negotiation of foreign investment contracts. Themes familiar to the continent's longer history of resource extraction in logging and mining emerge: power imbalances, lack of transparency and collusion by elites work against a 'just deal' for either national economy or local forest users. Yet for state agents these difficulties, and capacity to negotiate, are compounded by the unfamiliarity, opacity and technical peculiarities of an investment contract that is not for resource exploitation, but for locking up carbon stocks for environmental repair elsewhere – with its associated new technical-legal provisions and terminology of leakage, permanence and offsetting.

As McCarthy *et al.* (2012) emphasize for the Indonesian context, the international oversight entailed in 'green' projects aimed at a global environmental good itself, such as some REDD schemes, creates a particular politics of accountability, allowing some limits on appropriation. By contrast, in other settings, alignments between international green agendas and institutions, rural governmentality and regulatory arrangements may create the conditions for more

ruthless forms of green grabbing. Yet it is to the local particularities – the particular combinations of market and political contexts – where we must look to understand who wins and who loses at the local level. Filer (2012), for instance, discusses the case of Papua New Guinea, where the state has acquired rights over more than five million ha of customary land with the stated intention to sequester forest carbon, yet to date local political interests and prices favour continued logging over any 'green' project, as the possibilities for rent extraction by local elites and businesses remain far higher. And, critically, such returns can be gained over a much shorter timeframe compared to the much longer-horizon 'green' projects being proposed.

Legitimation processes (cf. Hall *et al.* 2010) are also critical in the enactment of green grabbing, and are taking powerful new forms. The moral weight of a discursively-constructed global green agenda legitimizes the appropriation of land and resources as carbon sinks, green fuel plantations or biodiversity offset reserves. Enclosures justified as contributing to the planet's future through conservation and repair may generate profit for firms and elites, while trumping more local livelihood concerns. New narratives of landscape are being constructed, whereby for instance forests become marketized 'carbon sinks' and not lived-in places, with embedded histories and cultures. Green grabbing constructs and rides on discourses of 'marginal land', assisted by satellite imagery that occludes people, livelihoods and social-ecological relationships from view, rendering lands open to new 'green' market uses (Nalepa and Bauer 2012). This, as McCarthy *et al.* suggest 'implies a new ''spatial fix'' that effectively works to relocate the climate-food and energy crisis to frontier areas' (2012).

The discourses through which land and resources are appropriated for green ends also construct the people who live there in particular ways. Sometimes this is along lines familiar from earlier conservationist eras. Communities are imaged either as environmentally destructive, backward and disordered, needing reconstruction to conform with modernist visions of 'sustainable development' (Adams 2004), or naturalized and romanticized as 'green primitives', part of increasingly globalized media spectacles (Igoe *et al.* 2010). These are labels that, as Li (2007), Tsing (2005) and others have shown, have long been not only vocabularies of power, but deployed creatively by those resisting external impositions (see Gardner 2012). Yet fundamental transformations of discourse are also evident. Now, everyone can be a 'green custodian' – if disciplined in the way that new green markets define (Leach *et al.* 2012). Such green market discourses are re-constructing indigenous peoples and land users as new green collective subjects, capable of and charged with caring for and repairing nature – within the values and logics prescribed by market discipline. Yet this new inclusive greenness also produces its own exclusions, in which some people come to be defined as against nature. Such exclusion from conformity to market logics can come to be at the centre of inter-ethnic, identity and cultural politics, for instance, playing into ongoing multicultural reforms and tensions as Cárdenas (2012) describes for Columbia. As green grabbing processes act to define new patterns of ownership and control over nature, therefore, they interplay with ongoing social and political dynamics and unfolding patterns of agrarian change, rural differentiation and class formation. The new value of nature – sometimes associated with areas of land, sometimes not – has thus created financial opportunities for investors (local and external), local elites (at the village and national level) and different branches of the state. Indebted nations find new

opportunities for cashing in on these assets or for borrowing against them. Local elites can profit through patronage relations and investors, in alliance with state actors, can also gain, as the wider literature on land grabbing suggests (Hall 2011, Borras *et al.* 2011). Deals are necessarily negotiated through decentralized networks of state agents, local and international businesses and local people, with uncertain consequences, as McCarthy *et al.* (2012) describe for Indonesia. Also, green assets can themselves become political tools, as for example conservation authorities align with counter-insurgency efforts to assert authority over territory, and in opposition to drug barons and local business elites, as vividly illustrated by Ybarra for the forests of Guatemala (2012).

Local agrarian relations and tensions can also fuel, and be fuelled by, green grabbing. In Sierra Leone, for instance, biofuel development by foreign agribusiness is playing into agrarian structures that already marginalise young men and women from land and decision-making rights (Mokuwa *et al.* 2011). As chiefs use their power to make deals with business agents and sign away village farmland, rural youth find themselves doubly dispossessed, first by local agrarian structures and then by business grabbing (Anane and Abiwu 2011) – accentuating an ongoing flight to the cities. This example signals a cycle in which enclosures and dispossession lead to rural exodus – leaving lands 'empty' and so even easier to label as 'marginal' and under used, and open to further appropriation. This is of course a long-standing cycle in the history of rural land control (Peluso and Lund 2011), and a stock-in-trade of colonial intervention; but today's green markets threaten new impetus to such dynamics.

This collection documents many cases where through such processes, land and resources are being appropriated – in very direct, material ways. However, the cases also document instances where the conditions for green grabbing are there, the possibilities laid, but are not manifested 'on the ground'. Sometimes this is because deals remain in the realms of circulation and speculation, not yet tied to any concrete site. Sometimes deals refer to spaces – an investor negotiates with a government for a notional area of so many hectares – but these are not yet territorialized and tied to particular places. Sometimes land and resources are transferred through sale or lease, but implementation is delayed through legal wrangles and local political contests. In such circumstances the natures with which people are living may already have been commodified, but inhabitants remain unaware of the new conditions in which they are living. Gardner (2012) in Tanzania, Filer (2012) in Papua New Guinea and McCarthy *et al.* (2012) in Indonesia all document permutations of such implementation delays. While they might be thought of as 'virtual green grabs' (McCarthy *et al.* 2012), in a very real sense they also constitute 'green debts' – with the timescales and terms on which they might be 'called in' highly uncertain, and open to ongoing political dynamics that connect actors across scales. The dislocation of the green economy from the ground – and its projection over long timescales (Filer 2012) – therefore enables proposed claims to race ahead of the real processes of implementation and contestation.

Ecologies and livelihoods: transformations and contestations

Green grabbing is therefore transforming livelihoods and landscapes in profound ways. Sometimes the impacts are direct and material, as where appropriations of nature are manifest in forcible, sometimes violent removal of people from land, or in

the prevention of livelihood practices and resource uses (Seagle 2012). In other instances, new appropriations of nature play into and intensify ongoing agrarian dynamics and livelihood struggles (Gardner 2012), in which direct impacts are less immediate and the winners and losers less clear-cut. The restructuring of labour relations is a key dimension of green grabbing highlighted, for instance, in the case of bioprospecting in Madagascar (Neimark 2012) and nascent biochar developments in African settings (Leach *et al*. 2012), as Li (2011) describes more broadly for land grabbing. Opportunities for certain local actors to gain profit and power through new green deals, as well as their interplay with context-specific livelihood and identity struggles pervaded by gender, generational and wealth differences, complicate any analysis of 'green grabbing' pitched in terms of 'the community' versus 'the state' or 'green business'.

Neat plans for green deals may not work out in practice. As McCarthy *et al*. put it, there is often 'a new type of ''double movement'' where large scale plans are resisted by ecologies, commodity price fluctuations and difficult land negotiations' (2012). Communities may also resist – although local politics, and the operation of green grabbing logics and processes, complicate patterns and processes of resistance in ways that move beyond even those described by Scott (1985, 1990). Contributions in this collection do reveal instances where land and resource users resist dispossession, whether through collective smallholder mobilization against green territorial ordering in the Amazon (Baletti 2012), or the highly-organized resistance by Maasai communities to the creation of a private nature refuge for ecotourism in Loliondo, Tanzania (Gardner 2012). Yet, as Gardner emphasizes, the ability of green market logics to articulate positively with certain local visions and priorities – constructing subjectivities in which some, at least, feel their interests lie in being green custodians, and that community development is best served through neo-liberal green payments – tempers resistance, thus creating particular forms of 'environmentality' (Agrawal 2005). At the same time, the pervasiveness of green market logics and valuations of nature in global discourses, media and consumer practices makes it all too easy to dismiss peasant resistance as individual, isolated opposition: not as valid social mobilization, but anachronistic holding-out against a common-sense green tide.

Green grabbing is having an impact on ecologies both materially and symbolically. As nature becomes valued for its different commodified products and services, and open to asset-stripping as carbon, species and aesthetic values are each sold off, ecosystems are torn apart both metaphorically and practically. Through such market simplifications creating marketized products and services, the more systematic, integrated, holistic dynamics of ecosystems – and the social-ecological relationships through which people live with and shape these – are too often denied (McAfee, 2011, Sullivan 2009a, 2009b). Contributions to this collection illustrate a variety of more integrated human-nature ontologies denied in this way, from the ancestral landscape values and practices enshrined in Malagasy food production practices described by Seagle (2012) to the historical and social understandings and practices around soil, charcoal and settlement in Liberia that lie so at odds with the recent isolation of soil carbon as 'biochar' (Leach *et al*. 2012).

Such alternative ontologies sometimes animate local resistance. They are themselves entwined with local cultural politics, identities and material struggles; they are not part of a naturalised, timeless community harmony. Yet, as Sullivan (2011, 2012) argues, it is easy for them to be imaged as such, playing into their characterisation as primitive or hopelessly romantic. In this way, as well as through

arguments that they are simply irrational or unrealistic in the face of green market logics, counter-ontologies of intertwined, human-ecosystem relations are frequently disqualified by business, state international, media and scientific actors alike. Despite this, arguments are growing for their recognition and revalidation, as part of the opening-up of a counter-politics of nature, rooted in local multicultural identities as Cárdenas (2012) explores for Colombia, as an alternative to market logics.

Ecological dynamics also limit the march of triumphal green capitalism, as the non-equilibrium dynamics of unruly ecologies – in climate, soil, water, vegetation, disease and animal interactions – jeopardize the well-laid plans of green schemes (Scoones 1999). When tree disease or fire destroys carbon stocks, or when water-based ecosystem services dry up due to unpredicted weather patterns, it becomes evident that complex, non-equilibrium ecologies do not obey the formulae of equilibrium economics. Ecologies may simply not be as disciplined as green markets assume them, and indeed require them, to be (Baviskar 2011). Cárdenas (2012) shows, for example, how monoculture oil palm plantations can be devastated by epidemic disease, while wilder and 'weedy' landscape alternatives thrive.

Given this, important questions arise about who bears the risks when ecologies do not behave as they are expected to. Is the responsibility to pay back the costs of a destroyed species bank or carbon forest to lie with its appointed local green custodians, adding perhaps unsupportable debt to livelihood loss? And how should the terms of legal contracts framing market deals address the inevitable uncertainties and unpredictability, rather than neatly calculable risks, implied by these interactions? Currently, these issues are barely on the agenda of those developing and promoting the standardized green market mechanisms and schemes at the centre of 'green grabbing'. Bringing more complex, non-equilibrium understandings of unruly ecologies and human-ecological relations to bear could, in turn, form part of a counter-politics to contemporary valuations and appropriations of nature, a counter-politics in which certain scientists and land users might find alignment.

Conclusions

In many parts of the world, a new political economy of land and livelihoods is emerging, driven by 'green' market economics, and global discourses of the use and repair of ecosystems. New valuations of nature are legitimizing and incentivizing new appropriations, and multiplying them, as ecosystems become compartmentalized and commodified in an ever greater variety of ways. This appropriation of nature for green ends – 'green grabbing' – adds a new dimension to the wider discussion of 'land grabbing' and the study of agrarian change in diverse rural locations across the world. There are new actors, political-economic processes and forms of resistance, constructed through new discursive framings. While there are many echoes of past interventions in the name of the environment, green grabbing operates often virtually through novel legal and market mechanisms, suggesting new methodological and analytical challenges, as well new dilemmas for action.

As we have discussed, the neoliberalization of nature, and the associated dynamic of 'green grabbing', shows diverse implications and consequences, highly dependent on context. Yet if green markets are socially and politically embedded, they are also socially and politically transformable. How can an agenda focused on equity and justice emerge? What spaces for change are available in this fast-emerging dynamic? Is accumulation by dispossession inevitable, or are other

outcomes possible? The papers in this collection, perhaps inevitably, offer a mixed set of responses. In some settings, the domination by powerful actors, and the operation of a particular set of market logics, seems to offer little prospect of a progressive alternative. Yet in other cases, there are some glimmers of hope. There is a clear role for engaged researchers and activists, NGOs and even aid donors in changing the terms of debate, the biases of policy and so the dynamics of investment. Agrarian struggles, focused on land and resources, must be seen in a new light, and must engage with virtual markets, fictitious commodities and the speculative character of 'green' commodity trading. This is new territory for many, and will require alliances of communities, activists and scientists in counteracting the negative effects of green grabbing and seeking out and shaping alternative solutions, even in highly constrained settings.

This will require inserting firm requirements for distributive justice and equitable development into market arrangements. It will mean asking who wins and who loses and whose collective, public good is being served by such arrangements. It will need a move beyond naïve visions of commensurability and equivalence, to address issues of distribution, rights and justice, both now and into the future, as starting points and basis for alternative policy regimes (e.g. Cullet 2009 on climate regimes, Bohm and Dhabi 2009, Bond 2011, Lohmann 2011). For instance, the Kyoto Protocol's Clean Development Mechanism was always supposed to be about development benefits through investment, before it transformed into a simple market mechanism. Many are now arguing for the re-capture of its original spirit and provisions (Henderson 2011). The same could apply to all green market mechanisms driving 'green grabbing', whether offsets, payments for ecosystem services or mitigation banking, with strict transparency, audit and review requirements.

But such a vision will not just happen. As we have seen there are many powerful forces conspiring against such an outcome, and many of the cases in this collection have documented the consequences. How can more meaningful forms of local engagement, linked to consultation processes involving conditions of transparency, accountability and free, prior informed consent, be assured? How can these be made central to demands for justice in green market arrangements? For this to happen, new mobilizations, alliances and coalitions must emerge. These will have to recapture nature from the clutches of market mechanisms, reinforcing local cultural understandings and the embedded 'ontologies of nature' we have discussed. Wresting nature from control by market logics – which compartmentalize, commoditize and privatize – must be a priority. This requires recasting the debate, asking whose values are being defined, whose services are being provided and whose goods are being sold? This will require a reframing of intellectual as well as policy focus. While understanding and critiquing the processes that result in the 'neoliberalization of nature' are important, they are clearly insufficient. Alternatives must emerge, rooted in relational, interconnected, animated understandings and experiences of landscape, ecology and human-ecological relations, responding to the unruly politics and ecologies of the real world.

We hope that this collection will offer some insights into these possibilities, and an opportunity to reflect on how the commoditization of nature under the conditions of neoliberal economies is resulting in major changes in agrarian dynamics in different settings. The emerging phenomenon of 'green grabbing' presents a fundamental and new challenge to 'peasant studies', and indeed all those concerned with the both the analysis and transformational change of rural politics and economies.

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