Article

Progress in Human Geography
2015, Vol. 39(1) 3–25

DOI: 10.1177/0309132514521483
phg.sagepub.com

Reviewing rescaling: Strengthening the case for environmental considerations

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Abstract
This article is concerned with the environmental dimensions of rescaling. Specifically, it explores debates around centralization and decentralization, introduces a key distinction between rescaling to jurisdictional spaces and ecosystem spaces, and suggests three future research trajectories: (1) analytical clarification of the differences between rescaling to natural versus jurisdictional scales; (2) examination of rescaling in light of its attendant process of creating new objects of governance; and (3) investigation of rescaling processes through a temporal lens, with the suggestion that rescaled environmental governance may be the site of some of the first and last manifestations of neoliberal governance reforms.

Keywords
rescaling, scale, centralization, decentralization, environmental governance, neoliberalism

I Introduction

Rescaling has been the subject of considerable debate in the critical geography literature over the past decade (e.g. Batterbury and Fernando, 2006; Brenner, 2003; Brown and Purcell, 2005; Cohen, 2012; Gibbs and Jonas, 2001; Jessop, 2009; Jonas and Pincetl, 2006; Leitner, 2004; Mansfield, 2005; Négrier, 2006; Perreault, 2005; Rangan and Kull, 2008; Reed and Bruyneel, 2010; Swyngedouw, 2004a). In this review, we argue that the specifically *environmental* dimensions of rescaling deserve to be drawn out as a more explicit theme in scalar scholarship.

We base this argument on our observation of a number of trends in the rescaling literature. Beyond debates on the ontological status of scales themselves (e.g. Marston et al., 2005), debates about rescaling tend to focus on the desirability of rescaling (Beierle and Cayford, 2002; Brown, 2011; Fischer, 2000; Geddes, 2006; Hill et al., 2008; Larson and Soto, 2008), the degree to which 'real' rescaling has occurred (Castro and Nielsen, 2001; Charnley and Poe, 2007; Harrington et al., 2008; Norman and Bakker, 2008; Ribot, 2004; Ribot et al., 2006), and the pragmatic benefits of rescaling to more ecologically sensitive scales (Grumbine, 1994; Parkes et al., 2010; Slocombe, 1993).

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More broadly, much of the scholarship on rescaling has focused on the extent to which rescaling is a manifestation of neoliberal reforms that seek to minimize the role of the state and involve individual citizens and private-sector actors in the delivery of services that were previously the purview of government (Brenner and Theodore, 2002a; Castree, 2008; Cohen, 2012; Fletcher, 2010; Harris, 2011; Himley, 2008; McCarthy and Prudham, 2004; Mansfield, 2005; Martin, 1997; Perreault, 2005; Sarkki and Rönkä, 2012).

Yet a number of elements of rescaled *environmental* governance are not necessarily captured in these existing debates and could, we suggest, serve as fruitful avenues for future research. Specifically, the existing literature often fails to differentiate between rescaling to an already existing jurisdiction (for example, a municipality) and rescaling to a physical space for which no electoral authority exists (for example, a community forest arrangement, or a watershed). This is a key analytic gap, as questions of public participation in decision-making are central to how rescaling is imagined, promoted, and implemented. A second lacuna is that most of the rescaling literature assumes that the objects whose governance is being rescaled – a forest, say, or a watershed – exist prior to and distinct from the scalar constitution of their governance. By contrast, we emphasize that rescaling often plays a role in the creation of new objects and spaces of environmental governance: 'the global climate', watersheds, and community forests are all examples of new governance objects significantly created through rescaling processes. Third, we suggest that the relationship between rescaling and the specifically temporal dimensions of neoliberalism are worth exploring, particularly in light of arguments about the centrality of environmental governance both to the earliest stages of neoliberalism's hegemonic ascendance, and to the last 'muscle memory' movements of its 'zombie' phase (to use Jamie Peck's term).

Before proceeding, it is worthwhile to clarify our position with respect to recent debates around the ontology of scale – a linchpin of all debates on rescaling. Readers will be familiar with ongoing debates about the ontological status and analytical utility of scales: do scales exist prior to and apart from their social construction, and does thinking in scalar terms aid or hinder our understanding of the world? Marston et al. (2005) suggest, for instance, that the very recognition of scale plays a role in creating the kinds of social hierarchies many critical geographers examine. Perhaps most central to the trends discussed below, have critical geographers become too reliant on the concept, such that all geographic issues are not considered fully examined until a scalar lens is applied (Jessop, 2009)?

For the purposes of this paper, we are interested in when, whether, and how actors *behave* as though scales exist, and what the consequences are in the realm of environmental governance. We thus adopt here Kaiser and Nikiforova's (2008) performative approach to scale, which argues that 'scales, as well as identities, materialize through the repetition of sets of citational practices that stabilize as well as challenge the boundary, fixity, and surface effects that materialize' (p. 542). In other words, this paper is not focused on those works that seek to examine whether or not a particular ecological or social scale exists in any 'real' sense, but, rather, is concerned with how scale is invoked in a number of recent environmental governance reforms and with what effects, and it seeks to understand the patterns of practice and scholarship linked to the rescaling of environmental governance in recent decades. Within this framework, then, we focus on those elements of rescaling that entail the shifting of decision-making 'up', 'down', and 'out' from central national or provincial/state governments (see Reed and Bruyneel, 2010). We use these terms here not to reinforce or reify the problematic scalar hierarchies familiar to

many critical geographers (e.g. Marston et al., 2005), but rather to reference changes in governance patterns that place increasing importance on the international, the subnational, the extra-governmental, and, of particular relevance to our argument here, the 'natural'.[1] On this latter point, we emphasize that we are both exploring and problematizing the concept of 'natural' scales: we use the term here to mean those spaces that are often delimited by biophysical phenomena – fully cognizant, as discussed at greater length elsewhere (e.g. Cohen and Harris, 2014), that the delineations of these boundaries are an apt example of boundary construction. Nevertheless, putatively 'natural' scales, often promoted in the ecosystem management literature, are an important component of rescaling initiatives and a central focus of our investigation here.

The rest of the paper proceeds as follows. First, we explicate the trends introduced above: debates about the merits and drawbacks of centralized and decentralized environmental governance, as well as literature addressing rescaling to existing jurisdictions and literature exploring rescaling to putatively 'natural' scales. Notably, we see both ecosystem scales and community governance units as falling into the latter category. Following this, we suggest three avenues for future work. The first of these follows directly from the last category in the review section: we propose that making explicit the distinction between rescaling to jurisdictional and 'natural' spaces opens fruitful options for future inquiry. Second, we explore how rescaling entails the creation of new governance objects. Particularly in the case of ecological scales, we suggest that rescaling has not only created new governance processes and spaces, but that, in many cases, rescaling to ecosystem spaces has in fact created new objects of governance, such as community forests, global climate, and so on. Third, we suggest that by adding a temporal dimension to our review of rescaling, the argument can be made that environmental governance reforms – including rescaling – can usefully be thought of as some of the first forays into, and last 'muscle memory' movements (to borrow Jamie Peck's term) of, neoliberalism. We conclude by exploring how consideration of these explicitly environmental dimensions of rescaling processes can usefully advance both scalar scholarship and environmental geography more generally.

II Trends in rescaling literature

I Debating centralization and decentralization

Much work on rescaled environmental governance has focused on the decentralization of decision-making. This decentralization typically takes place along two axes. The first of these is a scaling down, that is, a shift toward decision-making at more localized governance scales, according to what is often called the principle of subsidiarity. This change often entails 'transfers to lower-level governments, such as (a) local or municipal governments, (b) provincial or state governments in federal systems or (c) regional autonomous governments where these exist' (Larson and Soto, 2008: 216) and is promoted on grounds that are both pragmatic and normative. Pragmatically, the argument goes, 'local governments know the needs and desires of their constituents better than national governments' (p. 217). As discussed elsewhere (e.g. Cohen and Davidson, 2011; Hill et al., 2008), additional pragmatic benefits of decentralized agreements include greater physical proximity between decision-makers and the resources and citizens over which they have jurisdiction, and greater access to local knowledge and expertise. In addition to the pragmatic benefits of local expertise, this axis of decentralization is often predicated on more normative arguments about public participation in environmental decision-making.

A second – related – dimension of decentralization refers to scaling out; that is, increased

participation of extra-governmental actors in environmental decision-making. The move toward scaling out is consistent with turns toward a focus on 'input legitimacy' (Cohen, 2012); that is, that through the latter half of the 20th century, the question of a policy's democratic legitimacy has shifted from an emphasis on outcomes to a broader set of criteria that focus on the decision-making processes themselves, rather than their outcomes alone. In other words, input legitimacy – i.e. procedural democracy and justice – is concerned with questions about what kinds of processes can best incorporate citizen concerns, facilitate buy-in, and ensure participants' genuine consent (Beierle and Cayford, 2002; Fischer, 2000; Sabatier et al., 2005). State-led scaling out is thus promoted on pragmatic grounds that local citizens are as – if not more – familiar with resources than government actors and can thus come to 'better' decisions. It is also promoted on normative grounds, with arguments that it is more participatory, democratic, and 'fair' to include extra-governmental actors in decision-making processes, and that '"bringing the state closer to the people", increasing local participation, and building social capital' (Larson and Soto, 2008: 217), can empower local communities. Importantly, scaling out is not always led by the state: non-state actors can – and do – drive 'scaling out' initiatives. Kythreotis and Jonas (2012: 382), for example, note the important role of voluntary-sector initiatives in shaping 'sites and spatial scales of governance for sustainable development in the UK'. In both cases, scaling out can be democratically problematic to the extent that it can minimize participation from extra-local groups. For example, national and international environmental organizations – either broad or resource specific (e.g. forestry, water, fish) – can lose their voice when the question of who counts as a stakeholder is constrained by their degree of 'localness' (see, for example, McCarthy, 2002, 2005).

Decentralization – scaling down and out – is often criticized on two major and sometimes conflicting grounds: that decentralization does not really occur in a deep and thorough way, or, conversely, that it does, and has negative consequences. The first critique suggests that decentralization of environmental governance is often, in Ribot's (2004) term, a 'charade'. That is, while governments may pay lip service to the virtues of decentralization and making environmental governance more local and inclusive, and may even set up projects and programs that claim to enact these principles, real power remains situated with government-led processes in provincial or national capitals. Summing up the issue rather bluntly, Warner (2007: 12) notes that 'one important political reality is that states do not much like sharing power', and indeed there exist many examples of precisely this phenomenon at work (Castro and Nielsen, 2001; Charnley and Poe, 2007; Harrington et al., 2008; Norman and Bakker, 2008; Ribot et al., 2006; Wunsch, 2001). Norman and Bakker's (2008) study of transboundary water, for example, shows that national capitals retain power despite the localization of Canada–US transboundary resources; Ribot et al.'s (2006) work shows central governments' retention of control in six different cases of decentralized forestry initiatives, and Castro and Nielson (2001) argue that co-management can strengthen state control over resource policy.

Conversely, scaling down and out are also critiqued on the grounds that they can reinforce existing inequalities and lead to uneven policy implementation. Brown (2011), for example, argues that participatory models of water governance in South Africa can reinforce inequitable outcomes; Geddes (2006) critiques 'local partnership governance' in England for its role in undermining democracy and accountability, and

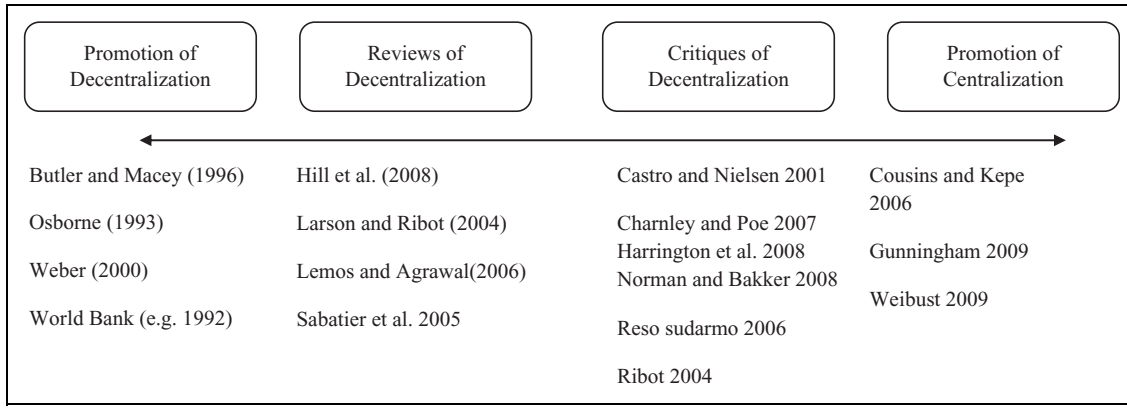

Figure 1. Centralization–decentralization.

Martin (1997) argues that the participatory management regimes driven by neoliberal reforms in Australia have resulted in 'competition for resources within the state, the projectization of environmental action, and a hesitance of the state to allocate resources for broader environmental monitoring' (p. 115). Reed (2007) explores local capacity for community-based management of UNESCO biosphere reserves, highlighting how varied local capacity can be within a single country. Relatedly, Klepeis and Vance (2003) show a link between neoliberal policies and environmental degradation, arguing that forestry reforms in Mexico have had the unintended consequence of deforestation. Despite the geographic and methodological diversity of these critiques, a key thread running throughout them is a concern with evidence that decentralization may lead to undesirable governance outcomes – because local institutions may lack the resources and capacity to implement policy effectively, because they may exclude critical voices or claimants, or because they may run counter to efforts to conceptualize and enact democracy, justice, and redistribution across larger spatial scales and polities.

One way to parse the rescaling literature, then, is on the basis of its degree of support for the scaling down and out – i.e. the decentralization – of environmental governance. A representative (but by no means comprehensive) sample of environmental management and geographic scholarship is presented in Figure 1.

2 Rescaling to jurisdictions; rescaling to 'natural scales'

Scholarship concerned with rescaled governance has placed considerable focus on rescaling to municipalities and urban regions. Here, municipalities and urban regions are conceived of as scales deployed in the rolling out of 'actually existing neoliberalism' (e.g. Brenner and Theodore, 2002b), as nodes in global networks that work in parallel with conventional scalar hierarchies in processes of globalization (Brenner, 1999; Bulkeley, 2005; Bulkeley and Mol, 2003; Leitner, 2004; Leitner et al., 2002; Swyngedouw, 1999, 2004b), or as both (Brenner, 2003, 2004).

In contrast, scholarship focused on rescaled *environmental* governance often addresses efforts to rescale governance to ecosystem spaces or other putatively 'natural' scales rather than jurisdictional ones. Advocates of ecosystem-based management, for example, often promote rescaling to ecosystems on the basis that 'the environment ought to be managed in whole ecological or landscape units based on integrative biological, physical, and/

or socioeconomic assessments' (Slocombe, 1993: 612). In other words, rescaling to spaces with ecological meaning, such as watersheds or forests, is often promoted for ecological reasons (i.e. the putative desirability of governing at ecologically meaningful scales), making the move distinct from the decentralization to jurisdictional scales (i.e. municipalities) that dominates the rescaling literature. Indeed, it is precisely the willingness to decouple governance from existing jurisdictional, state-delineated boundaries that is often held up as both the necessary condition for such rescaling efforts and the foremost reason to believe that they will lead to better outcomes.

Geographic scholarship has challenged such rescaling to ecosystem boundaries on at least two counts. First, it is not always clear where 'natural' boundaries are: the selection of any single set of ecosystem boundaries – for example, watershed boundaries – 'erroneously assumes that all biotic and abiotic factors are similarly organized' (Griffin, 1999: 509). Moreover, the delineation of 'natural' boundaries is not always straightforward even when creating bounded spaces for a single resource (Blomquist and Schlager, 2005; Cohen and Davidson, 2011; Meyer and Swank, 1996; Omernik and Bailey, 1997). Second, recent work has challenged the notion that because ecosystem spaces are non-jurisdictional they are non-political: Wester and Warner (2002), for example, note that naturalizing watersheds *makes* them political by prematurely cutting off meaningful debate about desirable scales for water management, and Cohen and Bakker (2013) explicate the deeply political consequences of decision-making along naturalized boundaries in Alberta, Canada.

We include 'communities' here under the rubric of 'natural scales', as the normatively naturalized social analog to the ecosystem. As noted elsewhere, Community Based Resource Management literatures often assume the existence of a discrete community that, in fact, may or may not exist (Charnley and Poe, 2007). This arguable oversimplification of 'community' has not gone uncritiqued. Watts (2004), for example, notes that community is a 'binding' word that simultaneously connotes the opposite of society (as large and anonymous) and the opposite of the state (centralized, authoritative). In this sense, 'community' serves as what Molle (2008: 132) refers to as a 'nirvana concept' – a 'photo negative of the real world' representing the opposite of all that is problematic. In this sense, 'community' is almost invariably framed as positive (Joseph, 2002; McCarthy, 2005; Williams, 1985), and hence as 'better' than scales defined through formal governmental processes. Herbert (2005: 852) suggests that the concepts of community can perform two functions in projects of neoliberal governance: it can stand as a recipient for devolved authority, and it can legitimate that very devolution. Nevertheless, these more nuanced framings reflect recent critical geography scholarship rather than the environmental management literatures they discuss, and we raise the point of community as 'natural' social scale here in order to emphasize the use – and, more importantly, the *effects* – of communities portrayed as natural social scales in the context of environmental governance. For example, Community Based Resource Management continues to have widespread popularity among many environmental policy-makers despite the widespread critiques identified above.

Figure 2 is a crude typology of geographic and environmental scholarship on the question of which types of spaces 'should' be used in the context of rescaling. It is important to note that here, unlike Figure 1, the pieces listed are not necessarily advocating for governance at one or another scale, but rather are examining the implications of governance at a particular scale.

III Looking forward: future lines of inquiry

Looking forward, these trends provide a number of opportunities for intervention into existing debates. The first set of debates – i.e. debates

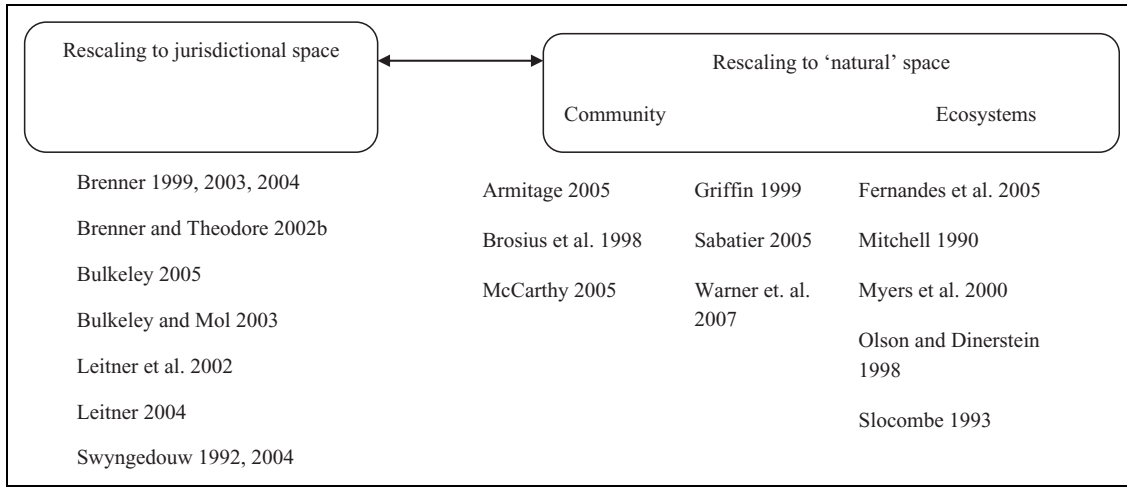

Figure 2. Rescaling to jurisdictional and natural spaces.

with respect to the extent, desirability, and significance of decentralized environmental governance – has been thoroughly explored in the existing literature. While these are sure to remain important topics of ongoing research and discussion, we do not see major new lines of research or thought being opened up regarding them. Building from the preceding discussion, though, we do suggest three avenues ripe for potential future work regarding rescaled environmental governance.

1 Distinguishing between rescaling to ecosystems and rescaling to jurisdictions

First, following on the above discussion and spectrum showing literature advocating rescaling either to already existing jurisdictions[2] or to 'natural' scales, we suggest that one avenue for future work is to put these alternatives into more direct conversation with one another. For the most part, scholars on either side of the centralization/decentralization spectrum are acutely aware of the benefits and drawbacks of both approaches, yet this type of nuance is not yet present in the distinction between juridical and natural scales. In other words, there is currently little explicit distinction in the literature between rescaling to an already existing jurisdiction (e.g. a municipality) and rescaling to a physical space for which no electoral authority exists (e.g. a watershed or a forest). This is a key analytic gap, as questions of public participation in decision-making are central to how rescaling is imagined, promoted, and implemented.

Challenges in relation to democratic accountability at ecosystem scales are well documented elsewhere. With a very small number of exceptions – such as small island states – these ecological scales are not typically equipped with the types of electoral accountability structures found at the municipal scale. Watershed-scale governance, for example, is critiqued for the policy gaps and overlaps within a watershed's boundaries and for lacking reliable mechanisms of democratic accountability (Blomquist and Schlager, 2005; Griffin, 1999; Hoover et al., 2007; Sabatier et al., 2005). This is not to suggest that electoral accountability at conventional jurisdictional scales is unproblematic, but the fact that citizens do not vote on ecosystem boundaries adds another major dimension of democratic complexity.

Yet, within scalar scholarship, the important distinction between rescaling to jurisdictions and rescaling to ecosystems is often unclear.

Currently, scaling up, down, and out are conflated into conversations about rescaling as an iteration of, variously, more participatory forms of governance, the decline of state involvement in decision-making, and neoliberal reforms. This conflation is problematic because rescaling to jurisdictions and rescaling to ecosystems are promoted on very different bases and present different questions about accountability, democratic and otherwise.

Moreover, they present two very different versions of what constitutes a polity. In the case of rescaling to natural scales, communities in relation to ecosystem spaces are often defined by geography rather than by political boundaries or by the type of interests that characterize the term 'stakeholder'. The distinction between citizens of political spaces and of putatively 'natural' ones can be likened to Kevin Cox's 'spaces of dependence' and 'spaces of engagement' (1996), in which the boundaries for the former 'define place-specific conditions for our material well-being and our sense of significance' (p. 668), and the latter speak more directly to the politics of scale and refer to 'the space[s] in which the politics of securing a space of dependence unfolds' (p. 668). In the case of ecosystem scales, these spaces of engagement (i.e. governance at ecosystem scales) often exist in order to make recommendations to jurisdictional scales with the political power to make legally binding decisions. Importantly, it is often extra-governmental groups that drive scalar change; in these cases, rescaling to ecosystems can be more a formalizing of existing structures than structural overhaul from the top down. The Salish Sea, for example, constitutes a case of toponymic rescaling from extra-governmental groups to centralized government agencies. In this case, what were formally three differently named bodies of water in the Pacific Northwest – the Strait of Georgia, the Strait of Juan de Fuca, and Puget Sound (all named for European explorers) – were collectively renamed as the Salish Sea in response to widespread recognition among academics and Aboriginal communities that ecosystems and communities on the Canadian and American sides of the border were, of course, interconnected (Rose-Redwood, 2011). Relatedly, these 'natural' ecosystem scales are often cognitively coupled with the notion of 'community', often to such an extent that ecosystem spaces are often labeled as community led: community forests[3] and community-based watershed organizations are both examples of this labeling. Here, we suggest that the distinction between these two forms of rescaling is not only conceptually important, but serves also as a productive avenue for future research with respect to the physical and political characteristics of those spaces to which things are being rescaled.

2 Environmental rescaling and the creation of new objects of governance

Much of the literature on rescaling focuses on the scale at which environmental governance occurs, and implicitly or explicitly assumes that the processes or phenomena being governed exist prior to and distinct from the scales of their governance. Indeed, this assumption is a necessary condition of the possibility for the oft-invoked 'scalar mismatch' (e.g. Cumming et al., 2006) between an object of governance and the processes or jurisdictions of its governance: something cannot be governed at the 'wrong' scale unless it has its own, 'right' scale that can in theory be recognized. Efforts to reconcile such 'mismatches' are central to the examples and literatures in the previous section, and arguments for rescaling to ecosystem scales are indeed premised on the existence of a set of natural and identifiable boundaries enclosing the potential object of governance.

Here, though, we want to focus on the possibility that many objects of environmental governance are in fact created, or at least substantially modified, precisely *through* the rescaling of environmental governance. In other

words, the objects with which rescaling is concerned may not even or fully exist apart from the scaling or rescaling of that governance. From biodiversity to the 'global climate', from 'local food' to 'national energy security', and in a whole range of other contemporary examples, the rescaling of environmental governance plays a significant role in constructing its own objects of governance. Thus, the 'ontological' and 'epistemological' moments of scale (Rangan and Kull, 2008; Sayre, 2009) are deeply intertwined through rescaling processes.

Perhaps the starkest example of this phenomenon is 'biodiversity', a key object of environmental governance that cannot be defined without reference to scale (e.g. 'global biodiversity', 'biodiversity hotspots'), the measurement and management of which will vary dramatically depending on the scale chosen.[4] As Taylor and Buttel (1992) noted decades ago, the construction of biodiversity as a 'global' environmental problem was a profoundly political rescaling effort that had enormous consequences in creating its own object and mechanisms of intervention. Despite often being constructed as a 'global' problem, prominent strategies for biodiversity management frequently entailed an enormous expansion of private investment in and control over tightly bounded 'protected natural areas', at national, regional, and local scales, chiefly in the global South (Adger et al., 2001; Taylor and Buttel, 1992). Inasmuch as a turn towards privately financed and managed conservation was an important component of the uneasy imbrication of environmentalism and neoliberalism, the creation of bounded biodiversity management areas was but one of multiple ways in which rescaling processes were central to that dynamic.

A major theme in political ecology, and another important example of rescaled environmental governance producing or modifying its own objects of governance, are the many 'strategic essentialisms' – to use Spivak's term – of indigenous or ethnic identities, and related territorial claims, created, crystallized, or modified in large part in response to efforts by national governments to claim resources in the name of the national interest (see, for example, Bebbington, 2012; Mollett, 2006; Norman, 2012; Perreault, 2001, 2012; Rose-Redwood, 2011; Sawyer, 2004; Sawyer and Gomez, 2012). In other words, efforts to shift governance of key resources or territories 'up' to the national scale often provoke not merely calls to move governance back 'down', but in fact the emergence of substantially new identities or territories as contested objects of governance.

Likewise, rescaled environmental governance substantially modifying, or even producing, the objects of its own governance can be seen in the proliferation of various forms of certified and 'local' commodities in recent years (see Mutersbaugh and Lyon, 2010; Mutersbaugh et al., 2005, 2010). Efforts to create certified commodities (e.g. fair trade, organic) and commodity chains involve many sorts of changes in governance, but the rescaling of governance in ways consistent with the discussion above – 'down' to local scales and communities, 'up' to transnational scales and networks, and 'out' to NGOs, cooperatives, corporations, and other non-state certifiers – have been absolutely central to them. In turn, such rescaled governance has actively created that which it governs: creating new categories of commodities, establishing novel commodity chains along which they flow, and reorganizing landscapes, labor practices, and other material elements by drawing new people and places into their production and circulation (and excluding others).

Finally, the domain of climate change has been one of the most important areas in which significant rescalings of environmental governance have occurred in recent years and decades, in a variety of ways, each of which has given rise to new (and often contested) objects of governance. Below, we briefly note just a few significant examples of such

dynamics. Our goal here is to be illustrative rather than comprehensive: what follows is by no means a complete account of how environmental governance has been rescaled in connection with climate change, or of the new objects of governance that have been created. Rather, we simply point to the fact that efforts to imagine or enact governance at supposedly more appropriate or effective scales are often materially and politically consequential, and sometimes constitutive, for the very things allegedly being governed.[5]

In the context of climate change, we have seen a strong shift in how atmospheric emissions are imagined as objects of governance. As recently as a few decades ago, problematic atmospheric emissions were imagined primarily as 'pollution': dirt, contamination, 'matter out of place' in Douglas' (1966) famous formulation. Their effects on human health and ecosystems were understood as primarily regional and national governance issues: smog, acid rain, and the like. Even when they crossed national borders, as with acid rain, it was relatively easy to trace specific flows from specific region of country *A* to specific region of country *B*. Thus, the focus was on *pollution control* at *national scales*, with metrics of how 'clean' or 'dirty' the air was in terms of concentrations of various sorts of particulate matter, and what the attendant implications were for human health and local or regional ecosystems. Today, though, environmental governance of atmospheric emissions focuses overwhelmingly on the single figure of parts per million of either carbon dioxide or carbon dioxide equivalents, with the maintenance of a *stable climate* – as opposed to 'clean air' – at a *global scale* as the ultimate objective, one pursued through new institutions of *global environmental governance*. Indeed, certain sorts of particulate pollution are now seen as potentially beneficial in some respects inasmuch as they may have some slight cooling effect. In short, the emergence and stabilization of a single metric as *the* number that is regularly reported on by the media, used as the key variable in scenarios for the future, and so on, is in part a result of efforts to rescale governance to the 'global' scale in the context of climate change.

Our point is not that greenhouse gas concentrations are not a real, urgent, and appropriate object of environmental governance; and we recognize that a single number aggregating and measuring levels of greenhouse gases is useful in part because it translates so effectively across many different arenas, frameworks, and scales, including scientific scenarios, carbon markets, administrative rules and regulations, and more. Our point, rather, is that 'climate change' as an object of governance could be measured, mitigated, and adapted to in a host of different ways, theorized and addressed at a variety of scales, and that those scaled framings of potential objects of environmental governance are materially and politically consequential. Thus, it is important to note that the emergence and stabilization of parts per million of carbon dioxide or, sometimes, carbon dioxide equivalents as *the* target of climate governance (as in the name of the group 350.org, for example) is neither materially determined nor politically neutral. At a minimum, carbon dioxide 'equivalents' are an abstract category, one that aggregates a number of different gases with a wide range of material properties and pathways. Conversely, focusing solely on carbon dioxide concentrations moves those other greenhouse gases out of the frame.

When we think about 'what is to be governed' with respect to climate change, there are in fact many contenders beyond parts per million of carbon dioxide and its equivalents. First, there are powerful arguments for arguing that not all carbon dioxide emissions should be treated as identical and interchangeable, as they increasingly are when they function as the universal equivalent of the 'new carbon economy' (Boyd et al., 2011). Many authors have argued for distinctions between livelihood and luxury

emissions, for the recognition of a development imperative in connection with carbon emissions, for the recognition of ecological debt related to earlier emissions and development trajectories, and so on. Any such distinctions would trouble the acceptance of a single, global number for carbon dioxide and its equivalents as an object of governance. Second, we might recognize that greenhouse gases, while materially critical, are not the primary 'causes' of climate change: instead, their historical and increasing anthropogenic production are very much products of particular economic and socio-technical systems. We might then take the latter as the most logical objects of governance with respect to climate change. Third, there are other, more 'downstream' potential objects of governance in relation to climate change. By and large, people do not directly experience or care about greenhouse gas concentrations as such: they experience and care about food production, extreme weather events, habitable and healthy environments, real estate values, and so forth. Thus, some have argued that a 'bottom-up' approach to climate governance that focused on such directly lived and experienced categories would be more meaningful and thus more successful than a top-down, universal approach built around a single metric that is abstract for most people (e.g. Prins and Rayner, 2007). Our point here is that any changes of the sort reviewed in this paragraph would lead to very different, and differently scaled, objects of climate governance – and that the focus on a single, 'global' metric eclipses these other potential avenues.

Similarly, if we focus not on objects of governance, but on actors and processes – who is responsible, who is to govern, and through what sorts of scaled frameworks – we see similar tensions around the dominant approach to climate governance, which continues to work through specific international institutions (most notably the United Nations Framework Convention on Climate Change) to seek a 'global' solution to the 'global' problem of rising total greenhouse gas levels. The latter are often taken as the key indicator of the 'Anthropocene', a new geologic era distinguished by humanity's clear and major effects upon the Earth. Yet, as many observers have pointed out, much is concealed in such framings. First, Swyngedouw (2010, 2013), among others, charges that the construction of climate change as a 'global' challenge, caused and faced by all of 'humanity', is designed precisely to obscure and depoliticize the high stakes and often antagonistic politics of differential responsibility for, vulnerability to, and power over the trajectories of climate change among people around the world. Second, Kythreotis (2012) and others emphasize that the presentation of the United Nations Framework Convention on Climate Change (UNFCCC) and other 'global governance' initiatives as forms of collective, consensus-based 'global' governance belies the underlying reality, which is that such institutions are still sites and forms of politics among highly unequal territorial nation states, many of whose positions and strategy are dominated by the territorially based accumulation strategies of private actors within them. In such a context, the focus on the single global metric of carbon dioxide ppm has allowed wealthier countries to avoid reducing emissions through strategies such as the Clean Development Mechanism, which has in turn given rise to entire industries engaged in designing, financing, implementing, and evaluating carbon offset projects, with far-reaching consequences for land use, livelihoods, and property relations. Climate mitigation that remained focused on the scale of the national state, rather than reducing total 'global' emissions at the lowest possible cost, would have led to very different material and political trajectories. Again, our goal here is not to argue for a 'correct' scale for climate governance, but to note the very real consequences of the dominant way in which it has been constructed as an object of environmental governance at a particular scale.

Another critical point illustrated by the example of climate governance is that rescalings of environmental governance, and the creation of new objects of governance, occur across temporal as well as spatial scales. As many authors have noted, decisions regarding what temporal scale to use in the construction of climate governance regimes (in the forms of, for example, baseline years, target dates, numbers of future generations considered, or range of natural climate variability) profoundly affect what is governed, how, and with what distribution of responsibility, costs, and benefits (see, for example, Liverman, 2009; Parks and Roberts, 2010). Put crudely, the relevant temporal scale for governance consideration can be constructed as including the centuries since the beginning of the industrial revolution, the two decades since the creation of the UNFCCC, only the present and future, or any of a number of other periods, up to and including pre-industrial geologic time and natural climate variability (Hulme et al., 2011; Klein et al., 2005). Depending on the temporal scale chosen, quite different objects of governance can emerge or be occluded: for instance, a deeper historical scale brings into view long-term dynamics of capital accumulation, colonial and postcolonial legacies, and the creation of 'ecological debt' as potential objects of governance within the domain of 'climate governance', and shorter- or longer-term policy targets implicate different actors and nation states depending on their projected rates of emissions and population growth.

In another example of rescaling the objects of climate governance, the relative failures of climate governance at national and international scales have led directly to a proliferation of climate governance initiatives at the urban scale, as many have noted (see Bulkeley, 2010, for a review). Such initiatives have taken the form of diffuse commitments to urban sustainability, but also very material commitments and investments in initiatives such as greenhouse gas inventories, tree planting programs, modifications to transportation and other infrastructure, and changes to building and zoning codes and plans in efforts to meet, at an urban scale, global carbon dioxide ppm targets. Such 'sustainable' or 'smart' cities (Kitchin, 2011; Townsend, 2013), whatever their ultimate effects on climate change, are clearly new scales and objects of governance, created directly through the rescaling dynamics noted above.

Finally, one of the most important rescalings of governance in the climate realm (although of course not only there) has been a strong and growing focus on individuals as sites, scales, and objects of governance – environmental and otherwise. Much work, for instance, has examined how individual subjectivities may be cultivated and shaped in order to bring about more climate-friendly behavior (see, for example, Dowling, 2010; Keskitalo et al., 2012; Okereke et al., 2009). Such efforts can be considered as, on the one hand, representative of the emergence of a climate-centered 'environmentality' (Birkenholtz, 2008; Phelps et al., 2010; Yeh, 2005) and, on the other, as an environmental manifestation of the trend towards the 'responsibilization' of individuals as a key component of neoliberal governance. The objects of governance that eventually emerge from a rescaling of environmental governance to the individual scale include not only subjectivities, but also much more concrete (if still imprecise) artifacts such as carbon footprints and offsets, ecological footprints, and other ways to let the carbon-conscious consumers so central to this mode of governance 'do their part' (see, for example, Freidberg, 2013). This 'responsibilization' also calls on individuals to actively participate in the creation and maintenance of the objects of governance identified above by, for example, participating in certified or local commodity chains, making use of urban transit systems, and so on. The point is that the individualized artifacts of climate governance – highly material, highly elaborated, with competing metrics, methods,

certifying authorities, labels, and more – exist only subsequent to and as fairly direct results of certain sorts of rescalings of environmental governance – in this case, ones inseparable from neoliberalism and its articulation with environmentalism.

3 Rescaled environmental governance: embryonic and zombie neoliberalism

Although an ecosystem approach to environmental governance has been advocated for decades (if not longer, with antecedents at least as far back as the writings of John Wesley Powell), its recent rise to 'best practice' through the mid- and late 1990s is closely correlated with more neoliberal approaches to environmental governance, especially with respect to their shared logics of decentralization, smaller government, and market-based approaches to decision-making (Cohen, 2012). Indeed, scholarship on the left-hand side of Figure 1 and the right-hand side of Figure 2 often reproduces strongly neoliberal arguments: that centralized government is inefficient (and conversely that management at the 'local' scale is efficient), that the state is a central obstacle to efficient management (and therefore that governing in or through extra-governmental spaces is a better alternative), and that the most pressing challenges and innovative solutions transgress Westphalian state boundaries. Many connections between rescaling and neoliberal ideologies are well documented elsewhere (e.g. Bakker, 2007; Cohen, 2012; Himley, 2008; Jessop, 2002; McCarthy, 2005; McCarthy and Prudham, 2004), and it is not our intention to repeat those here. Nevertheless, a few key points with respect to the relationship between neoliberalism and rescaling bear mention. We raise these points to contextualize our third recommendation for future research, which involves inquiry into the temporal dimensions of rescaling, and, specifically, the possibility that environmental reforms – and rescaling in particular – may constitute some of the first and last manifestations of neoliberalism.

First, neoliberalism is a *necessarily* environmental project (McCarthy and Prudham, 2004) both because of its roots in liberalism and the latter's focus on the enclosure of space and production of private property, and, more recently, the project's commitment to market-driven instruments and their application to the non-human world. Latterly, this has taken the form of what Karen Bakker calls mercantalización (Bakker, 2002) – both the privatization *and* marketization of particular elements of the environment (in her case, water). As greater attention is paid to various iterations of the neoliberal environmental project, analysis of the relationships between neoliberalism and rescaling have expanded to include analyses of forestry reforms in Finland (Sarkki and Rönkä, 2012), water privatization in Bolivia (Perreault, 2005), and many more examples (Brenner and Theodore, 2002a; Cohen, 2012; Fletcher, 2010; Harris, 2011; Himley, 2008; McCarthy, 2005; Mansfield, 2005; Martin, 1997; O'Reilly and Dhanju, 2012).

Second, just as neoliberalism is a necessarily environmental project, it is also a necessarily scalar project, inasmuch as the enclosure of space and the redefining of what constitutes legitimate policy communities and objects of governance all create new spatial and social scales. Indeed, neoliberal projects are often predicated on rescaled governance. Scaling down to the 'local' (however defined) and scaling up from the state to the global (e.g. through the development of international organizations) (e.g. Conca, 2006) are often pursued in conjunction with one another, as Swyngedouw (2004a) articulated in the concept of 'glocalization' – that is, the simultaneous scaling upward to international institutions and downward to more localized forms of government. A third element here is a scaling out from government-led decision-making processes to decision-making structures that include a wider array of non-state

actors, including private entities, individual citizens, and civil society groups (Beierle and Cayford, 2002; Buchy and Hoverman, 2000; Dietz and Stern, 2008; Duram and Brown, 1999; Irvin and Stansbury, 2004; Warner, 2007), thereby creating new social and spatial scales.

Third, the implements, drivers, and effects of neoliberalism are both heterogeneous and uneven. Indeed, as Perreault (2005: 266) notes, 'Though neoliberal policies the world over share an underlying logic, they are shot through with contradiction and inconsistency that reflect the struggles involved in designing, implementing, and resisting them'. This point about unevenness is relevant to our arguments in that it emphasizes the scalar dimensions of rescaling. In other words, rescaling environmental governance can be seen as a response to crises of capitalism (Cohen and Bakker, 2013), which are deepened – rather than resolved – by neoliberal reforms. Because these crises are inherently uneven (Smith, 1984), so too are the reforms designed to address them (Brenner et al., 2010). Moreover, in typical Polanyian response, the latter half of the 'double movement' is equally uneven and can, among other things, actively invoke scale by 'scale jumping' (e.g. by drawing greater public attention – and therefore, resistance – to particular policies by knitting together a national-scale fabric comprised of local-scale organizations; Perreault's study of Bolivian peasant irrigators' resistance to national-level policies details one such example). The point about neoliberalism's unevenness is also critical to our arguments in that different elements of neoliberalism are implemented differently in different locales.

Finally, we emphasize that rescaling has also been carried out in the name of 'good' or effective governance – a central tenet of neoliberal reforms. Building on arguments about the pragmatic and normative superiority of 'scaled out' decision-making, the concept of 'good governance' was most prevalent in development debates through the 1990s and 2000s, and, in particular, was promoted through neoliberal international financial institutions seeking 'better' outcomes from their financial investments. Indeed, through the 1990s, good governance became a black box connecting states and their administrations (Doornbos, 2001). In its broadest application, the term is most commonly taken to mean institutional structures that promote legitimacy, representation, and accountability (Doornbos, 2001; Pierre, 2000; Weiss, 2000; Woods, 2000). Notably, this loose definition 'does not prejudge the locus of actual decision making, which could be within the state, within an international organization, or within some other structural context' (Hyden, 1992, cited in Doornbos, 2001).

Given the genesis of the term in international financial institutions – and the World Bank in particular – it is unsurprising to find that good governance is often framed as part and parcel of neoliberal reforms. Indeed, critical scholarship in response to 'good governance' often pivots on the concept's deeply political outcomes, arguing that although good governance is 'explicitly presented as non-political and non-ideological, it strongly favors economic liberalization' as a solution to the 'disappointing results of the Structural Adjustment Programs of the 1980s' (Demmers et al., 2004). Here, we emphasize an additional dimension of good governance – one that often gets short shrift in critical geographical scholarship: effectiveness. In the case of environmental governance, the question of whether or not rescaled governance leads to 'better' environmental outcomes is conspicuously underrepresented (cf. Martin, 1997; Phelps et al., 2010) and notoriously difficult to measure (i.e. Sabatier et al., 2005), but is frequently invoked in the rationales for rescaling initiatives (Cohen, 2011, 2012; McCarthy, 2005).

With respect to the temporal dimensions of neoliberalism, then, and specifically our positing of rescaling as a first and last manifestation of neoliberal reforms, we suggest the following. Critical reviews of the relationship between

neoliberalism and environmentalism suggest that environmental governance reforms may have been some of neoliberalism's first forays into regulatory change. It has been widely observed that neoliberalism and particular dimensions of environmentalism, initially seen as inherently oppositional, came to evolve in mutually constitutive ways (McCarthy and Prudham, 2004). This is particularly true of what came to be known as 'free market environmentalism', which embraced the use of policy tools such as cost-benefit analysis, cap and trade schemes, and the general approach of 'internalizing' into the formal economy via prices of the value of environmental benefits and degradation alike, has been the dominant direction in environmentalism from the 1980s up through the present. It is also true of the rise of community-based resource management and other rescaling initiatives that reduce or alter the role of government in environmental decision-making.

At the same time, capital accumulation in the neoliberal era has come to turn in no small part on drawing more and more aspects of the environment into circuits of capital, whether in the form of patented genes, payments for ecosystem services, or the rapid expansion of the 'new carbon economy' (Boyd et al., 2011). The shared logic between arguments in favor of ecosystem boundaries and community management and arguments in favor of a reduced role for government and decentralized approaches to decision making are made clear in, for example, the case of watershed governance (Cohen, 2012). In another example, Cooper (2008) argues that the dramatic acceleration and authorization of the privatization and commoditization of particular biological processes, beginning in the USA as early as the 1980s (Cooper, 2008), was an early manifestation of neoliberalism. Drawing on Foucault's (2002: 252) insight that 'the living is that which produces, grows, and reproduces , Cooper argues that environmental (re) production lends itself well to the processes of economic production and marketization that are so central to neoliberal reforms. The phenomenon is perhaps nowhere more obvious than in the development and ascendance of 'ecosystem services' what Robertson (2007: 115) refers to as the 'massive process of codifying and commodifying the ecological relations around us'.

This focus on privatization and commodification appears again as an early form of neoliberal nature. Described in its early form as 'roll-back' neoliberalism (Peck and Tickell, 2002), reforms in neoliberalism's early phase focused on the 'active *destruction and discreditation* of Keynesian-welfarist and social-collectivist institutions (broadly defined)' (Peck and Tickell, 2002: 384, emphasis in original). In the environmental sector, this happened most often through the deregulation of environmental protections as witnessed in, for example, the case of drinking water contamination in Walkerton, Ontario, where Prudham (2004) argues that 'roll-back' neoliberalism contributed to the multiple conditions that created the 'perfect storm' in which the Walkerton tragedy unfolded. In Latin America, these early phase 'adjustments' 'included fiscal discipline; refocusing public spending on education, health, and infrastructure; tax reform; interest and exchange at market rates; reduced or uniform trade tariffs; openness to foreign investment; privatization of state enterprises; deregulation; and securing of property rights' (Williamson, 2000, in Liverman and Vilas, 2006). These early 'roll-back' forms of 'neoliberalizing' nature are central to rescaling in several ways. First, the early (and continuing) neoliberal focus on a reduced state role is consistent with the scaling down and out of environmental governance. The pragmatic and normative arguments for scaling down and out – that the state is a poor environmental regulator, that local actors and local expertise are central to effective management, that participation through decision-making is more democratic than participation through political processes – all are consistent

with (but not exact duplications of) neoliberal arguments for reduced state involvement in environmental governance. Second, early neoliberalism's focus on environmental deregulation, especially as expressed through the application of Structural Adjustment Programs, is consistent with the scaling out component of rescaling, which often sees regulatory authority shift from provincial/state or national governments to ecosystem or community scales in the quest for more locally appropriate and participatory forms of decision-making. Importantly, this is not to say that neoliberalism, especially in its early forms, explicitly demands governance at ecosystem scales, but rather that there is a shared logic and temporal correlation between the two such that they mutually reinforce, rather than conflict with, one another. This mutual reinforcement, we suggest, facilitated the uptake of environmental governance reforms as some of the earliest manifestations of, or experiments with, neoliberalism in ways that might not have been possible with other areas of reformed governance, such as labor or education, where governance innovation may have been more at odds with the logics of neoliberalism.

What Peck and Tickell (2002) describe as the latter phase of neoliberalism – the 'roll-out' phase – is focused on 'the purposeful *construction and consolidation* of neoliberalized state forms, modes of governance, and regulatory relations' (p. 384). This latter phase is also relevant to rescaling, as enclosure and privatization were – and indeed continue to be – central to neoliberal reform processes. The enclosure of space and privatization of spaces of capital production through, for example, wildlife preserves (e.g. Robbins and Luginbuhl, 2005), private fishing rights (e.g. Mansfield, 2004), and land use reform (e.g. Wolford, 2007) have been central to resource management in the neoliberal era. The production of new spaces of environmental governance is consistent with the shift toward rescaling to ecosystem scales; that is, the bounding and regulation at the site of newly created spaces is a logic shared by proponents of neoliberal reforms as well as by environmental innovators concerned with carrying out environmental governance at ecologically meaningful scales.

Since Peck and Tickell's (2002) work on distinctions between 'roll-back' and 'roll-out' neoliberalism, it has been proposed that we are entering (or have already entered) a post-neoliberal era (Hall et al., 2013; Kotz, 2009; McCarthy, 2012; Sheppard and Leitner, 2010). Although the contradictory logics of free market capitalism were undoubtedly brought to light through the 2008 financial crisis (e.g. Panitch and Gindin, 2009), many (Comaroff, 2011; Peck, 2010; Peck et al., 2010) caution against asserting the 'end of neoliberalism '*in toto*, house-of-cards style, if for no other reason than that neoliberalism was never a monolithic structure in the first place' (Peck, 2010: 108, emphasis in original; see also Perreault, 2005). Nevertheless, the global financial crisis of 2008 did have the effect of jolting the logics of free market capitalism. The result of this jolt, argues Peck, is that even the staunchest supporters of neoliberalism are going through the movements without wholeheartedly believing its underpinning rationales:

> Dead but dominant, neoliberalism may indeed have entered its zombie phase. The brain has apparently long since ceased functioning, but the limbs are still moving, and many of the defensive reflexes seem to be working too. The living dead of the free-market revolution continue to walk the earth, though with each resurrection their decidedly uncoordinated gait becomes even more erratic. (Peck, 2010: 109)

Even if, as Peck and others[6] suggest, we are witnessing the demise of 'neoliberalism-as-we-know-it', many of the initiatives to rescale discussed herein were undertaken at the height of neoliberal thought in the late 1990s and early 2000s, and continue to this day. Moreover,

as Peck et al. note, neoliberal reforms are still being undertaken – even in their zombie form – 'animated by technocratic muscle memory, deep instincts of self-preservation and spasmodic bursts of social violence' (Peck et al. 2010: 105). In other words, ongoing rescaling – particularly of rescaled environmental governance – is, at the very least, still part of the rote repetitions involved in the deployment of 'good governance' innovations. In fact, the very absence of a tight, explicit linkage to neoliberalism may mean that assumptions about the virtues of rescaling environmental governance may live on long after neoliberal orthodoxy has been directly challenged in realms where its dominance is more obvious and overt. Indeed, if Peck et al. are accurate in asserting that in looking beyond neoliberalism, 'new spaces must be carved out not only for a global ethics of responsibility, but also for sustainable forms of sociospatial redistribution – anathema to neoliberalism – which can ultimately only be secured *between* places, through a reconstitution of sociospatial relations' (Peck et al., 2010: 112), then the time for this type of exploration is particularly ripe.

IV Conclusions

This article has sought to highlight those dimensions of rescaling that are specific to environmental governance by reviewing how the specifically environmental elements of rescaling – wherein we focus on the scaling up, down, and out of environmental decision-making – have been addressed to date in the literature and by suggesting three productive avenues for future research.

With respect to current debates vis-à-vis environmental rescaling, we emphasize two key discussions. The first, familiar to geography scholars, involves debates around the extent to which rescaled environmental governance is actually occurring or is indeed desirable (e.g. Gunningham, 2009; Larson and Ribot, 2004; Lemos and Agrawal, 2006). Here, debates focus on the importance of locally appropriate legislation and public participation and empowerment on the one hand, and the value of standardization, institutional capacity, and democratic accountability on the other. These debates will not be new to those familiar with governance and scale, but they raise an important point about *environmental* governance in particular: where rescaling involves decision-making at non-elected scales, new questions about empowerment, democratic accountability, and legitimacy are raised (e.g. Castro and Neilsen, 2001; Griffin, 1999; Norman and Bakker, 2008). This latter point about rescaling to non-jurisdictional scales is the second key discussion addressed in the paper, although we note that it is less an active discussion than a series of parallel conversations. As shown in Figure 2, these parallel conversations involve, variously, rescaling to jurisdictional scales (most commonly in the form of decentralization to municipalities through neoliberal reforms), rescaling to ecosystem spaces (e.g. watersheds, forests, ecoregions), governing at environmentally sensitive scales, and scaling out to 'community', which we argue functions in these discussions as the social analog to 'natural' physical scales. Each of these forms of rescaling is currently the subject of much discussion in debates on neoliberalism, environmental management, and community-based resource management, respectively, but the similarities and differences between the three have yet to be drawn out.

Indeed, we suggest that putting these scalar alternatives into conversation with one another is one avenue of potential future scholarship. We note that, currently, all three forms of rescaling are conflated in rescaling debates without a nuanced distinction being made between them. An examination of, for example, how the rationales for rescaling to ecosystem spaces and rescaling to juridical ones might complement or

contradict one another would be a welcome intervention in scale debates. A second potential avenue for future research speaks to debates about the ontology of scales and explores how new objects of governance are created through rescaling processes. Although many examples point to new governance objects created through rescaling – e.g. protected areas, global climate, or alternative commodity chains – this has yet to be drawn out as an explicit theme in the literature and, we suggest, presents a productive avenue for future work that explores the debates and processes through which these new objects are created. Finally, we explore the degree to which rescaling might usefully be thought of as some of the first and last manifestations of neoliberal governance, and suggest that studies exploring the temporal dimensions of rescaling in light of neoliberal reforms would enrich not only the scale literature, but also contemporary debates with respect to the current state of neoliberalism. As neoliberalism moves into its 'zombie phase' (Peck, 2010) we suggest that rescaled environmental governance might be one of its longest-living 'muscle memory' movements given heightened public attention to environmental issues, public pressure to 'do something' about environmental crises, and the oft-cited benefits afforded by decentralized and participatory forms of decision-making.

Funding

This work was supported by a postdoctoral fellowship from the Social Sciences and Humanities Research Council of Canada.

Notes

1. We are well aware of the many critiques of thinking of scales in terms of a vertical hierarchy, or a series of nested units. However, the vast majority of policy-makers, policy advocates, and indeed academics from multiple disciplines (including many geographers) persist in thinking of and operationalizing scales in these terms, and it is these efforts, and academic analyses of them, that are our subject here.
2. We recognize, of course, that these 'already existing' jurisdictional scales are themselves products of scalar construction, but we distinguish here between jurisdictional spaces and ecosystem spaces: the former have both legislative authority and (admittedly imperfect) electoral accountability, and the latter neither.
3. For a more thorough treatment of community forestry, see Charnley and Poe (2007).
4. This is arguably a version of the 'modifiable area unit problem', to invoke a concept from what is usually a different area of the discipline.
5. Our thanks to two anonymous reviewers for comments that substantially sharpened this section.
6. Discussion on post-neoliberalism has been particularly active with respect to Latin America. A full discussion of Latin American reforms is outside the scope of this paper; for a more thorough treatment, see, for example, Escobar (2010); Grugel and Riggirozzi (2012); Kennemore and Weeks (2011).

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