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SCALES AND POLITICS

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Introduction

The issue of scale has long been central to political ecology. Efforts to explain local human-environment systems in relation to larger regional and historical factors characterized the field's roots in both anthropology and cultural ecology (see, e.g., Wolf 1972). In *Land Degradation and Society*, Blaikie and Brookfield (1987: 13) explicitly declared "the crucial considerations of geographical scale and the scale of social and economic organization" to be one of the three main characteristics of their approach to society-environment interactions. Their famous "chain of explanation" involved "links" at each of four scales: (1) individual land managers, (2) the local community ("their relations with each other, other land users, and groups in the wider society who affect them in any way"), (3) the state, and (4) the world economy (1987: 27). Only by attending to all four scales and their interactions could political ecologists account for the full range of factors affecting land management and degradation at any given site. A quarter-century later, Robbins (2012: 11) characterized political ecologists as employing "a mode of explanation that evaluates the influence of variables acting at a number of scales, each nested within another, with local decisions influenced by regional policies, which are in turn directed by global politics and economics."

Blaikie and Brookfield emphasized that this was a difficult task, because relations between scales were neither simple nor linear. Measurements of erosion made at a plot or field scale, for example, could not simply be multiplied by area to estimate erosion rates for a catchment or a country, because most soil lost from one plot would be deposited in another (1987: 53). Any measurement involved a scale, and how a process such as erosion worked was itself dependent on the scale at which one sought to measure and understand it. And *measuring* soil erosion, complex though it is, only began to indicate the challenges of *explaining* it, which involved myriad social, political, and economic processes that themselves operated in different ways at different scales. "There is seldom a neat one-to-one correspondence of geographical scale and 'level' of decision-making," Blaikie and Brookfield pointed out, and "the scale at which the analysis is pitched tends to affect the type of explanation given to land degradation" (1987: 64-65). Add to this the fact that scale is not only a spatial but also a temporal issue, with faster and slower processes—both social and biophysical—interacting with each other, and explanation becomes an historical as well as a geographical challenge. Blaikie and Brookfield summarized their approach this way, substituting regional for local:

Clearly there is no "correct" scale for an investigation of land managers and their decisions, but there is an appropriate one for answering different questions. Frequently a comprehensive enquiry into land management will require an approach which employs a nested set of scales: local and site specific where individuals or small groups make the relevant decisions; the regional scale involving more generalized patterns of physiographic variation, types of land use, and property relations and settlement history; the national scale in which the particular form of class relations give the economic, political and administrative context for land-management decisions; and the international scale, which, in the most general manner, involves almost every element in the world economy, particularly through the commoditization of land, labour and agricultural production.

(1987: 68)

In many ways, Blaikie and Brookfield's conceptualization of scale and their arguments regarding its importance for political ecology have stood the test of time remarkably well. As the field has grown and expanded its purview—from soil erosion to all manner of environmental problems, from farmers' decision-making to the national and international politics of land, water, wildlife, and conservation, and from the rural, developing world to urban and developed settings—political ecologists have continued to explore processes at diverse spatial and temporal scales. Scale is evidently an inherent feature of political ecology, at the very least because the political organization of today's world is fundamentally territorial—organized into discrete, bounded geographical spaces—whereas both ecological and economic processes routinely exceed or defy these boundaries. As we will see, modern politics depend on and produce scales in myriad ways.

In the intervening years, however, scale has emerged as a focus of inquiry in its own right, both within and beyond political ecology, provoking debates that have refined and in some respects challenged Blaikie and Brookfield's formulation. Five years after *Land Degradation and Society* came out, Neil Smith (1992: 72) complained that "The theory of geographical scale—more correctly the theory of the production of scale—is grossly underdeveloped." In the two decades since, the conventional categories of geographical research—such as households, cities, counties, provinces, nations, etc.—have been challenged as social constructs rather than natural or pre-given spatial orders. Thus one might question the precise boundaries between the land manager, the local/regional, the national and the international, and ask why one should begin with four scales at all (why not five, or three, or ten?). One might further ask how scales are produced, sustained, contested, and altered at particular places and times. The relative importance of different scales, and the relations among them, have also been subject to scrutiny: are scales necessarily "nested"—such that they "fit inside each other like a set of Chinese boxes" (Blaikie and Brookfield 1987: 69)—or is this assumption faulty? Must scales be hierarchically organized, with "higher" ones dictating or constraining action at "lower" ones, or can local agents provoke change in the other direction as well? Might one instead understand scales as emergent properties of non-hierarchical networks? What if scales aren't discrete, but fluid, overlapping, and mutually constitutive?

Questions such as these sparked intense debate in human geography in the 1990s and early 2000s, alongside growing interest in scale among political ecologists. The meaning of scale, its ontological and epistemological status, and even its existence and relevance to geography, were questioned and contested. Political ecologists engaged these debates to various degrees, giving rise to what Zimmerer and Bassett (2003) and Neumann (2009) termed "a political ecology of scale." In the first section of this chapter, I briefly describe scales' various meanings and dimensions in the hope of clarifying their relevance for political ecology and human geography

more generally, beginning with Blaikie and Brookfield's third scale, the nation-state. In the second section, I apply these ideas in reviewing the debates about scale in human geography. I suggest that these debates proved irresolvable on the predominantly theoretical terms in which they took place, and that since about 2006 the prevailing approach to scale in human geography generally has been more inductive and empirical.

The final section shows how political ecologists had in many ways anticipated the shift and were already busy doing empirical research along the suggested lines, with or without express intent. Their methods and theories have been diverse, reflecting the varied conditions and questions at hand in each case, and no single paradigm, model, or methodological solution to the question of scale has yet emerged. Rather, several broad themes have developed, including the importance of multiple sites and scales of empirical inquiry; the problem of scale mismatches among political, economic, and ecological processes; temporal as well as spatial dimensions of scale; and the need for relational and process-based approaches to conceptualizing and studying social-environmental problems. I close with some thoughts on the strengths and weaknesses of this *de facto* strategy for the study of scales and politics in political ecology.

What is (the nature of) scale?

Blaikie and Brookfield's third scale—the national state—provides a useful starting point for exploring the meaning and status of scale. Three factors make the state an exemplar of geographical scale, while also highlighting the dangers of taking scales for granted as natural in geographical (and other) research.

First and most obviously, the state imposes explicit spatial and hierarchical patterns of social organization. It is fundamentally territorial, defining and relying on spatial boundaries that delimit its sovereignty. Moreover, the system of states has been comprehensive for more than a century, ensuring that Earth's entire terrestrial surface (excluding Antarctica) is incorporated into one or another nation-state's territory. Within their respective territories, states have typically imposed (or attempted to impose) sub-national scales of administration and law, such as the individual citizen or subject, the household, municipalities, counties, and provinces. The legal relationships between these scales have been codified, more or less precisely and effectively, usually in the form of exclusive hierarchies—meaning that larger (higher) scales dictate or impose what can or cannot be done at smaller (lower) ones. Notice that many of these nested, hierarchically organized scales can be (and often are) referred to as “levels” of government—although in a moment we will want to draw a distinction between scale and level.

Second, the state has material effects, independent of the observer, within and through this exclusive spatial hierarchy. As Blaikie and Brookfield noted, it was at the national scale that class relations determined “the economic, political, and administrative context” in which actors at the individual and local/regional scales made decisions regarding land management. The state's nested system of jurisdictions, statutes, and regulatory and fiscal agencies produces manifold observable effects on social reality. These effects are socially and historically produced, to be sure, but they are also ontologically real, and for this reason the state is an *operational scale*.

Third, the state also acts as an *observational scale*, collecting data according to its social and territorial divisions. With varying degrees of accuracy and detail, states measure land, property, people, and myriad economic activities and biophysical processes, and they typically do so in terms of the spatial categories that organize the state itself. These data carry with them the units of measurement (e.g., individuals, households, census tracts) in which they were collected, aggregated at various territorial scales (e.g., cities, counties, provinces, the nation); the former are the *grain* or resolution of the resulting data, while the latter are the *extent* over which the

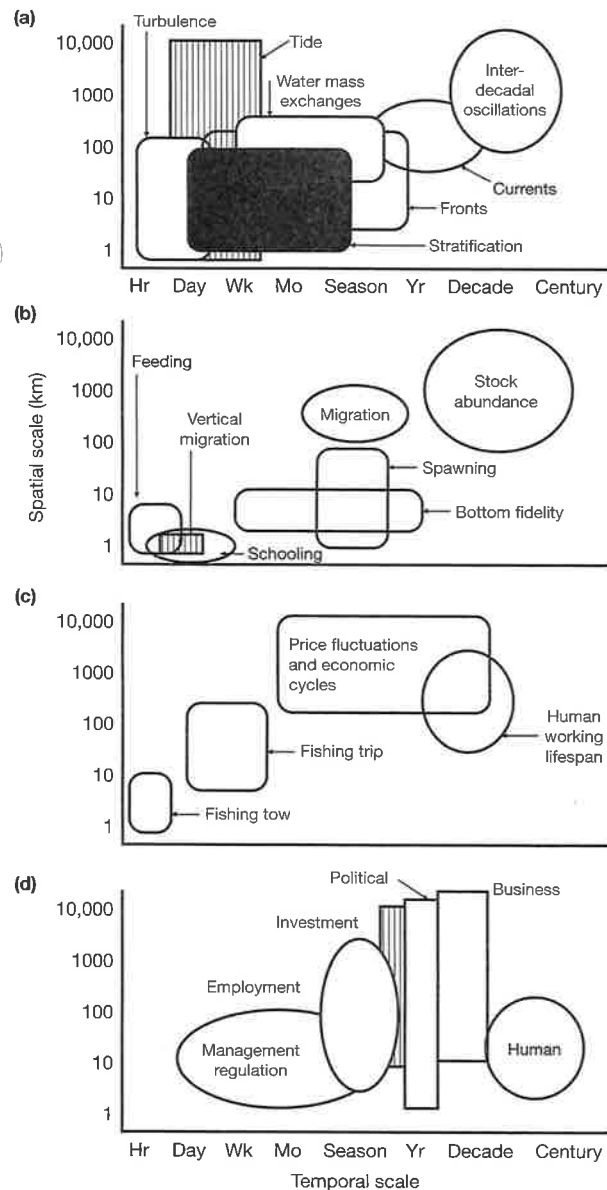
data are collected. A given grain and extent together constitute an observational scale—that is, a system of measurement that permits comparison of unlike things by abstracting away their dissimilar attributes. (Think, for example, of a meter stick, whose grain is a millimeter, extent is a meter, and which can be used to measure the length of all sorts of different things (Sayre and Di Vittorio 2009).) Data also carry temporal scales, with grains of, for example, days, months, or years, and extents of years or longer. Notice that here, scale is *not* synonymous with level, and no hierarchical relationship between scales is implied or presupposed.

It is important to distinguish between operational and observational scales: the former are real attributes of phenomena in the world, whereas the latter are epistemological tools, chosen and applied by the observer, to make sense of those phenomena (Sayre 2005). It is not surprising that so many social scientists have practiced “methodological nationalism” (Brenner 2004: 38), because the state is at once convenient and peculiar in the degree to which it performs both roles simultaneously: indeed, its authority to apply observational scales is a constitutive part of producing the effects that make it an operational scale (Bourdieu 1994). But failure to distinguish between them can mislead researchers into taking units of measurement (e.g., households or states) as given *a priori* because they *both* appear “natural” when viewed through the lens of state data and are made real through the social effects they help to produce. This social-epistemological puzzle lies at the heart of recent work in several fields, including political ecology, demonstrating that the operationalization of state scales is highly fraught and imperfect (e.g., Porter 1995; Robertson 2004; Prudham 2005; O'Neill 2006; Harris and Alatout 2010; Goldman et al. 2011; Mathews 2011).

The general lesson here is that operational and observational scale represent ontological and epistemological moments, respectively, in an ongoing dialectical relationship of material phenomena and human attempts to understand them. More specifically, researchers cannot avoid employing observational scales (this is true even of qualitative methods), and they ought to choose the grain and extent of their inquiries deliberately. Moreover, because material phenomena occur at operational scales, it is important to choose, insofar as possible, observational scales that match or fit the operational scales of the phenomena of interest.

The state provides a relatively clear instance of a geographical scale. But what about Blaikie and Brookfield's other scales: the individual, the local/regional, and the global? Are these operational or observational scales, or both? How are they produced? And what about phenomena that do not operate through or within the state's neatly defined territorialities? The state may try to dictate land management practices for farmers within its territory, for example, but what actually happens “on the ground” may deviate considerably from these prescriptions, and the relevant factors may not have such clearly demarcated spatial boundaries. The vague spatiality of Blaikie and Brookfield's local/regional scale is indicative of these considerations. The movements of people, goods, ideas, and capital, as well as all kinds of biophysical processes (e.g., the cycling of water, soils, and nutrients; the climate system; evolution) have operational scales, and they call for observational scales chosen to apprehend them appropriately. But the scale(s) of the state are often only contingently related, or entirely unrelated, to the scales of these phenomena (Figure 39.1). Moreover, whether there are “levels” that organize such phenomena is far less clear than it is in the case of the state.

Ecological science illustrates well the kinds of predicaments that scalar analysis of non- or extra-state phenomena must often confront. In an influential paper, Wiens (1989) analyzed empirical data from various ecological systems and demonstrated not only that patterns depended on the grain and extent of observation, but also that patterns discerned at different scales could contradict one another. This suggests that different processes are determinative at different scales, and that the *relations among scales* pose key challenges for scientific understanding. Two



Space/timescale diagram of characteristic processes from the natural sciences: (a) physical; (b) biological; and from the social sciences: (c) fishing; (d) fishing communities.

points warrant emphasis here. First, ecologists frequently use hierarchy theory as a heuristic framework, with “levels” defined in a loosely functional sense (e.g., organism, population, community). But this is understood not as an exclusive hierarchy (in the state-bureaucratic, top-down sense discussed earlier) but as a constitutive hierarchy, in which phenomena at a “lower” or smaller scale may display different patterns when aggregated at a “higher” or larger scale—patterns that are irreducible to their smaller-scale components (so-called emergent properties, aka the whole is greater than the sum of its parts). Second, insights such as these have contributed to the broader shift away from equilibrium-based ecological theories, drawing attention to non-linear or threshold dynamics and helping to inform what Botkin (1990) termed “the new ecology” (cf. Zimmerer 1994). A key insight of the new ecology is that small differences in initial conditions can have large effects on subsequent dynamics, meaning that history becomes much more important than earlier ecological theories acknowledged (May 1977).

In summary, scale refers variously to size, level, and relation (Howitt 1998, 2003), and it is important to be clear about all three (Table 39.1). Scale as size is an observational-epistemological matter. Scale as level may be observational or operational (or both), as the nation-state example illustrates. Scale as relation is ontological, having to do with how processes operating at different scales interact in ways that are not simply aggregative or linear but instead produce qualitatively distinct material consequences (Sayre 2009; Sayre and Di Vittorio 2009).

Table 39.1 The multiple aspects of scale (from Sayre and Di Vittorio 2009: 22)

Scale as	Also known as	Metaphysical status	Expressed	Consists of	Concerned to measure or understand
Size	Observational scale; absolute scale	Epistemological	Quantitatively	Grain and extent	Weight, size, area, distance, duration, speed, etc.
Level	Conceptual scale. May be observational or operational; ongoing effort to reduce disparity between the two	Either epistemological or ontological	Qualitatively	Multiple scales-as-size arranged functionally and/or hierarchically	Different orders within one such metric
Relation	Operational scale; relative scale	Ontological	Both: where change in quantity becomes change in quality	Processes interacting across scales-as-levels; relations between scales (e.g., how to “scale up” or “scale down”)	Scaling effects; thresholds or nonlinearities produced by cross-scale interactions; scale mismatches

Figure 39.1 The operational scales of biophysical and social processes affecting fisheries. From Perry and Ommer (2003).

"The scale question" in human geography

The distinctions identified above go a long way toward untangling the debates surrounding "the scale question" (Brenner 2001: 592, quoting Lefebvre 1976: 68) that erupted in human geography in the 1990s and early 2000s. The debate began from Peter Taylor's 1982 essay in *Transactions of the Institute of British Geographers* titled "A Materialist Framework for Political Geography." Calling for "a political economy of scale," Taylor identified the global as "the scale of reality," because it was at this scale that capital accumulation and circulation operated in the modern world-system. He argued that individuals did not experience this scale directly; rather, their lives unfolded at "the scale of experience," which Taylor equated with urban settings or systems. The contradictions between these two scales were managed (but not resolved) by the state, understood as "the scale of ideology," which separated and articulated reality and experience.

Taylor's intent was to question political geography's preoccupation with the nation-state while putting the field on a firm materialist basis, and he insisted that his three scales were not given *a priori* but were socially produced by the dynamic operations of the capitalist world-system. In particular, he stressed that "there is nothing 'natural' about the modern state" (Taylor 1982: 27). These points were acknowledged and broadly shared by early contributors to the subsequent debate, such as Smith (1984, 1992), Brenner (1997), Swyngedouw (1997), Delaney and Leitner (1997) and Marston (2000). But Taylor's choice of terms echoed the base-superstructure rubric of Marx's 1859 *Preface to a Critique of Political Economy*, and despite Taylor's explicit arguments to the contrary, subsequent scholars questioned the implication that local or urban experience was less "real" than the global, or that the state was merely ideological and not, again, real in its effects. World systems theory, others pointed out, "simply shifted the focus from one scale—the national—to another—the world system," whereas "what is needed is a multiscalar approach" (Mahon and Keil 2009: 10).

Taylor was proposing an operational scale and suggesting that political geographers ought to build their observational scale accordingly. Smith (1992: 74) recognized this distinction, albeit using different terms, and cautioned against equating "the local strictly with the concrete, the global with the general," and Swyngedouw (1997) and Brenner (1998) pointed out that the scales of capitalist (re-)production were dynamic; all three scholars identified the politics of scale as central to capitalist restructuring. Globalization, for example, did not render the nation-state less important but rather involved *rescaling* its relationships with both smaller and larger scales; Swyngedouw (1997) dubbed it "glocalisation." In a subsequent piece, Brenner (2001) further insisted that scale be distinguished from other core geographical concepts such as place, territory, and network. But others mistook Taylor (and Brenner) as imposing an epistemology that ignored or denigrated the experiences and agency of people in their everyday lives. Marston (2000), for example, challenged the priority assigned to capital accumulation and called for greater attention to processes of social reproduction rooted in non-wage labor (especially by women) at the scale of the household. Marston and Smith (2001; cf. Smith 1992) added the body as another scale worthy of inclusion.

As the debate escalated early in the 2000s, the distinction between scale and level was also overlooked, as almost everyone used the two terms interchangeably (Brenner 2001; Marston and Smith 2001; cf. Sayre 2005). No one disputed that scale was socially produced and therefore contestable and historically contingent, nor that conventional geographical scales such as the urban, the state, and the global should be questioned. But the debate foundered on whether scale is inherently hierarchical. Marston et al. (2005: 420) concluded that it was, and that scale and level could "be simply and effectively collapsed into" one another. Having done this, they reasoned

that the concept was inextricable from domination and inequality in the world, and they therefore proposed to "expurgate scale from the geographic vocabulary" and replace it with a "flat ontology" (2005: 422). Curiously, they claimed that their flat ontology consisted of "self-organizing systems" (2005: 422) with emergent properties—precisely what ecologists associate with the constitutive hierarchies described above. Scale as relation went unmentioned in their argument.

Following numerous critical responses (e.g., Collinge 2006; Jonas 2006; Leitner and Miller 2007), the theoretical debate effectively ceased, apparently of exhaustion. It was replaced by empirical investigations in which the material reality of hierarchical relationships in the world—including but not limited to those of the state—was recognized as requiring methods and epistemologies attuned to the issue of scale. For example, in an edited volume of papers from the time, published several years later (Keil and Mahon 2009), scholars used scale to explore social movements such as anti-globalization, immigrants' and indigenous rights, the Black Panthers, and environmentalism, as well as child care provision and public health, so-called creative cities, and the global designer fashion industry. Many of the cases involved networks that operated across scales, connecting people and ideas in scalar but non-hierarchical ways. Several authors emphasized the need to delimit scale conceptually and to avoid privileging it over place, territory, networks, and mobility. Above all, they stressed attention to processes (which have scales or scaling effects) over scale *per se*. Some authors seemed to understand scale as hierarchical, while others did not—but this wasn't seen as problematic. The editors summarized the volume with the claim that "while the national state is no longer the pivotal scale, no other scale has succeeded in taking its place" (Mahon and Keil 2009: 12).

Political ecologies and scale

Nature and ecology were not prominent topics in the debates described above (Swyngedouw 2004). And as political ecology has grown over recent decades, scale has sometimes been invoked as a core problematic of the field (e.g., Zimmerer and Bassett 2003; Swyngedouw and Heynen 2003; Paulson and Gezon 2005) and sometimes remained in the background, relatively unremarked (e.g., Neumann 2005; Robbins 2012). The basic idea that social-environmental issues are simultaneously local and global—that there are both small- and large-scale factors at work—has remained a constant theme (e.g., Keil et al. 1998), even as the stability and coherence of "the local" and "the global" have been questioned. But explicit theorizations of scale itself have been relatively rare. Zimmerer and Bassett (2003: 3) challenged Blaikie's scales as "pregiven sociospatial containers" and suggested that scales are, instead, "social-environmentally produced." The chapters in their edited volume, they wrote, demonstrated "a variety of scalar configurations that display vertical (hierarchical, nested) and horizontal (networked) patterns," but they did not attempt to synthesize a theory of scale, instead merely highlighting "the central importance of ecological scale in shaping political-ecological dynamics" (2003: 4). Neumann (2009: 403) identified three themes from work in political ecology that together "suggest a richer theorization of scale: (1) the interactions of power, agency, and scale; (2) socioecological processes and scale; and (3) scaled networks." He saw these as incorporating "the key precepts of the politics of scale—scale as socially constructed, relational, contingent, and contested—into an existing framework that highlights power relations and a dialectical approach toward nature-society relations" (2009: 404).

Swyngedouw and Heynen (2003) present what is probably the most thoroughgoing theorization of scale in political ecology, building on Swyngedouw's (1997, 1999) earlier work on "glocalisation" and on the history of the Spanish waterscape. "The priority, both theoretically and politically," they write:

never resides in a particular social or ecological geographical scale; instead, it resides in the socio-ecological process through which particular social and environmental scales become constituted and subsequently reconstituted. In other words, socioecological processes give rise to scalar forms of organisation—such as states, local governments, interstate arrangements and the like—and to a nested set of related and interacting socioecological spatial scales. In addition, these territorial scalar arrangements intersect—often in contradictory and conflicting ways—with the scalar networks of, for example, socioecological production and consumption systems.

(Swyngedouw and Heynen 2003: 912–913)

It is perhaps not surprising that water and cities provided the empirical raw material for Swyngedouw and Heynen's reflections on scale. The geomorphological organization of watersheds is an excellent biophysical example of constitutive hierarchies, and the propensity of modern industrial societies to rearrange watersheds through massive engineering projects perfectly illustrates the idea of socioecological rescaling, as Swyngedouw (1999, 2004) shows to powerful effect in the cases of Spain and Ecuador. And the "metabolism" of cities—a metaphor that is itself an instance of rescaling, from the level of an organism to that of entire urban areas—likewise captures the complex intersection of social and biophysical processes in modern capitalism. Cities are at once sites of neoliberal state rescaling—in the devolution of regulatory authority from the national to the urban scale, for example—and embedded in networks of energy, water, raw materials, food, and waste that operate at all sorts of spatial and temporal scales. Urban political ecology sets itself the task of understanding how these socionatural processes are produced and how they interact with each other and with people, markets, built environments, and institutions.

Broadly speaking, Swyngedouw and Heynen see non-hierarchical scales in "the circulation of capital and its associated socioecological, metabolic transformation processes," and hierarchical scales in the state's territorializing processes "of regulation and governance in which these are embedded" (2003: 913). Capital in all its forms—money, means of production, raw materials, labor—flows through (and produces) networks of various scales, mobilizing and altering biophysical processes of all kinds. States attempt to guide or control these transformations through hierarchically organized scales of political organization, laws, and regulations. But the coherence and effectiveness of those efforts are tenuous and contested in the face of both networked and hierarchical maneuvering and resistance by firms, bureaucrats, activists, and NGOs. "[A] process-based approach to scale focuses attention on the mechanisms of scale transformation through social conflict and political struggle" (Swyngedouw and Heynen 2003: 913). In short, the scales of all these processes not only affect their operation and outcomes, but also become key stakes and strategies in their own right.

What this theory of scale offers, then, is a series of epistemological and methodological guidelines: Do not take the scales of one's analysis for granted; identify the key processes that produce a phenomenon, and induce their scales empirically; be alert to how processes are rescaled, and to the possibility of non-linear, qualitative change across scales; be reflexive and critical about how observational scales may affect the patterns one sees in the resulting data. Overall, these guidelines suggest an open-ended approach to scale, with the potential for a virtually limitless array of particular applications.

Although most work in political ecology has not emphasized scale conceptually, the analytical scope and content of the field is broadly compatible with these guidelines. Political ecologists routinely conduct research at multiple sites and scales of inquiry, following the processes empirically rather than positing their scales *a priori*. They often identify qualitative differences between sites connected by these processes, keyed to myriad cultural, ecological, political, and

economic factors that affect and are affected by these connections. That the scales of political, economic, and ecological processes are often mismatched is unsurprising and frequently goes without saying. Historical legacies figure prominently in most political ecological accounts, bringing in temporal as well as spatial dimensions of scale. And in many cases, political ecologists rely on relational and process-based approaches to conceptualizing and studying environmental problems. The aggregate result is a wealth of empirically rich cases, which could lend themselves to closer comparative analysis and synthesis if examined more explicitly through the lens of scales and politics. How scientists conceive and study environmental problems—as local, regional, or global, for example—depends on both observational and operational scales, and this in turn shapes the political possibilities for addressing them (Taylor and Buttel 1992). Social movements and environmental activists can turn the state's exclusive hierarchies to their advantage by "jumping scales" to higher levels of government (McCarthy 2005; Urkidi 2010). Similarly, numerous indigenous groups have found that bypassing the nation-state altogether and asserting their rights at international levels can enable them to tilt the balance of power more in their favor (Perreault 2003).

The potential for such synthesis is further indicated by recent works that explore the intersection of markets, state agencies, and scientific practices in neoliberal environmental governance. If the state routinely imposes observational scales of measurement, it often does so specifically to render nature "legible" in terms suited to commodification and market-based regulation (Robertson 2006). Scientists may be enrolled in these efforts whether or not the underlying methods and metrics are coherent or robust, and the resulting contradictions and failures provide compelling examples of the difficulty (or impossibility) of harmonizing the logics of nature and capital. If academic scientists decline to produce the types of knowledge needed by regulators and investors, a kind of state-produced market may conjure extra-academic alternatives into prominence (Lave 2012). What emerges is a broad (if imperfect) homology between the state's use of observational scales to abstract, measure and regulate people and ecosystems, and capital's reliance on the value abstraction to convert labor and nature into commodities (Robertson and Wainwright 2013). As Mann (2007) shows, the value abstraction is itself at stake in many struggles over "the politics of measure," an insight that has abundant potential for application throughout a world in which—as Blaikie and Brookfield (1987: 68) put it—"the commoditization of land, labour and agricultural production" extends to "almost every element in the world economy."

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