Unsettling the concept of scale and the commons: A review of scalar ontology and directions for future research

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Abstract

Scale is a powerful concept, offering a lens that shapes how we perceive problems and solutions in common-pool resource governance. Yet, scale is often treated as a relatively stable and settled concept in commons scholarship. This paper reviews the origins and evolution of scalar thinking in commons scholarship to intentionally unsettle the concept of scale and suggest new directions for future research. Beginning with seminal texts on scale and the commons, this paper traces the emergence of an explicit scalar ontology—one that orders both spatial and conceptual relationships vertically, as hierarchical nested levels. This scalar ontology underpins a shared conceptualization of common-pool resource systems and serves as an analytic lens that inevitably illuminates certain kinds of relationships and questions while simultaneously obscuring others. Both the advantages and limitations of the commons scalar ontology are reviewed in light of debates over the concept of scale in critical geography, where commonplace assumptions about scale have long been debated. Drawing on examples from our own research on small-scale fisheries governance in Tanzania and Mexico, we highlight alternative viewpoints that become possible by relinquishing certain scalar assumptions. We argue that the intersection of literature on the social construction of scale and the commons can generate needed attention to everyday experiences of scale along with under-studied sites, forms of difference and mobility, enlivening our understanding of the dynamic nature of the commons.

Introduction

Scale is a powerful concept, offering a lens that shapes how we perceive the world and concomitant problems and solutions to complex human-environment dilemmas. Yet scale itself is often regarded as a discrete “thing”, a concept with a self-evident and stable meaning in many fields, including the wider field of commons or common pool resource (CPR) scholarship. As the governance of CPR systems are impacted by complex scalar processes such as globalization, climate change, and the expansion of transnational trade, it becomes salient—and thus the goal of this paper—to draw renewed attention to the implications of scale in the constitution of basic questions, relationships, and processes in the commons. By unsettling the concept of scale, we argue that new insights into the dynamics of commons governance can be realized.

To do so, we first sketch the development of fundamental thinking about the nature and role of scale in commons scholarship. Through our review of seminal texts on scale we outline the development and contours of an explicit scalar ontology for the commons—one that orders both spatial and conceptual relationships vertically, as nested scalar levels. This underlying ontological commitment to

scale manifests itself in the kinds of relationships commons scholars have tended to study and in the structure of popular conceptual tools and frameworks. We consider the analytic advantages afforded by a shared conceptualization of scale, enabling commons scholars to analyze certain complex phenomena with a degree of comparability. A consistent approach to scale also helped facilitate greater dialogue and collaboration with natural scientists. However, we argue that the fundamentals of scale in commons scholarship have limitations—fitting the world into a particular epistemological ordering frame at the expense of seeing and representing other types of relationships. Drawing on literature from geography on the social construction of scale, we unpack the presence and effects of prevalent assumptions about scale in CPR literature, and in turn, unveil new avenues for future research that are obscured at present. Drawing on examples from our own research on small-scale fisheries governance in Tanzania and Mexico, we demonstrate the value in rethinking scale in analysis of the commons. We envisage the intersection of commons scholarship and literature on the social construction of scale as a productive means to generate new ways of theorizing about the commons.

From local to multi-level contributions of the commons

Elinor Ostrom's contributions to the field's fundamental thinking about scale is often overlooked amidst the widespread acclaim she received for her award-winning work on how local people overcame collective action dilemmas to govern common-pool resources (CPRs). Yet upon closer consideration it's evident that her approach to scale in the commons was also groundbreaking at the time. Her work placed a spotlight on the local and concomitant "tiny events in the sea of human endeavors" (Ostrom and Ostrom 2004). Meanwhile, many economists and political scientists considered the unfolding of everyday, local decision-making to be parochial and inconsequential—too isolated and mired in the tangles of context to be useful for the development of any generalizable principles relevant to higher-level phenomena, which were considered inherently more important and worthy of serious scholarly attention. The analytic choice to focus on the local as a lens to understand the inner workings of complex governance problems was a radical departure from the status quo in economics and political science at that time. By focusing on understanding local-level governance, Ostrom's early work upended the scalar convention that bigger is always better in terms of analytic insight and scholarly value. Her winning of the Nobel prize attracted a frenzy of attention to her work and came with affirmation that her pursuit was intellectually valid and theoretically groundbreaking.

In addition to her unusual focus on the local, Ostrom's work was unconventional within political science because it approached CPR governance as necessarily multi-level (Gibson, Ostrom, and Ahn 2000). Meanwhile, most political scientists at the time specialized in studying actions and outcomes at specific scalar levels—such as local, regional or national—in isolation (Gibson, Ostrom, and Ahn 2000; McCann and Ward 2013; Bridge and Perreault 2009). This norm in political science tended to pigeonhole theorists into "a particular level of primary interest to the scholar without much attention to how the phenomena at that level is linked to phenomena at a higher or lower level" (Gibson, Ostrom and Ahn 2000, 223). Counter to this trend towards scalar specialization, Ostrom strove to understand how governance functioned both within and among levels. This early scholarship set a second precedent for a shared approach to scale and the commons, where scalar levels were not treated as unrelated phenomena, but instead understood as integrally linked. As a result, unravelling the dynamics that circumscribed scalar levels became a critical component of understanding multi-level governance in the commons.

Foundations of the commons

Choice and social organization in the search for the "science of rules"

Foundational work of Vincent and Elinor Ostrom's in the 1960s and 1970s revolved around understanding the role of choice in human organization in a range of different contexts. They saw social organization as the result of choice, somewhat the reverse of most scholars who approached apparent social structures as durable entities that explained social conditions such as class, the international cold war arena of "first" and "third" worlds, and the bureaucratic structures of the state (Aligica and Boettke 2009, 56).

Instead, the Ostroms' work began from the philosophical assertion that choice, "the ability to consider alternatives and select a course of action among them, is the basis of the human condition and any mode of social organization is the outcome or expression of choice" (Aligicia and Boettke 2009, 56). The amalgamation of many choices yields the apparent social organization we see in the world, a tenuous and dynamic arrangement rather than hardened structures. As a driver of social change, choice both solves some problems and creates others, conceptualized as an adaptive cycle (Aligicia and Boettke 2009). For instance, a community dealing with issues related to water allocation for crops may collectively choose to coordinate their labor and build an irrigation delivery system, but now they also have technology that needs to be maintained, and issues of differential water delivery among upstream and downstream users—more problems to be solved. The Ostroms' posited that the unique faculties of human language enable us to navigate the field of seemingly infinite and iterative choices collectively rather than everyone pursuing their own individual strategies (Aligicia and Boettke 2009). Ongoing rounds of communication, negotiation, and collective decision-making results in institutions; the patterned responses that come to shape our expectations of others behavior and also pattern our own (Aligicia and Boettke 2009). These expectations allow some groups to coordinate their actions to achieve an optimal collective outcome[1] in regards to resource provisioning (Ostrom 1990)—rather than the often theorized alternative that everyone innately pursues their individual strategies leading to a sub-optimal group outcome and the tragedy of the commons (Olson 1965; Hardin 1968).

In general, the Ostroms were interested in developing a "science of rules" that could help theorists understand the patterns that surround humans' interactions with their environments. They pursued their shared interest in the rules shaping human choice in myriad directions, including studies of policing behavior in metropolitan areas, the delivery of municipal goods and services, and the ability to solve collective action dilemmas in common-pool resource governance (Ostrom 1990, 2011; Ostrom, Gardner, and Walker 1994) along with a growing community of other scholars and students. While acknowledging the diversity of their wider body of scholarship, we focus our discussion on the field of CPR governance, acknowledging that that is one general direction among the diverse intellectual projects that emerged from the work of the Ostrom's and other theorists of collective action.

Incorporating notions of scale through frameworks

Two influential conceptual devices provide excellent examples of how commons scholarship assimilated notions of scale: the level of rules (Kiser and Ostrom 1982) and the design principles (Ostrom 1990). Here we briefly outline how scale as composed of discrete, decomposable, nested levels is built into these influential frameworks. In the former, rules are ordered into three distinct levels that pertain

[1] An outcome that is better for the group than the sum of their individual best strategies.

to different types of actions that can be taken (prescribed by rights) governed by sets of rules generated at different conceptual levels (Schlager and Ostrom 1992). The levels of rules and concomitant rights are hierarchical and nested, where the lowest-level operational rules pertain to day-to-day decisions about access and use which are nested within collective-choice rules. This intermediary level shapes operational activities by determining who is eligible to exercise operational rights—this distinction separates individuals who can exercise use of the commons and those who can determine the rules about who gets to use the commons and how. Collective-choice rules specify the terms of management, exclusion and alienation and are nested below the constitutional level. Constitutional choice rules delineate who is eligible to participate in crafting collective choice rules, which in turn constrain operational level rules in a nested manner (Ostrom and Ostrom 2004).

Similarly, in *Governing the Commons* (1990) Ostrom first summarized her tentative observations on key elements of robust and enduring institutions for the governance of common-pool resources through her articulation of the design principles. The principles were developed through comparative deductive case study work from different CPRs around the world, including Japanese mountain commons, Swiss grazing commons, irrigation systems, and ground water disputes (Ostrom 1990). While the principles are often mis-read as a set of blueprints for sustainability (a "panacea for success", Ostrom 2009), they were intended as a set of shared observations about enduring elements of successful governance systems and a common language for discussing governance across CPR systems. Among the eight original principles is the importance of nested enterprises. This principle underscored the importance of links between governance occurring at smaller-scales of organization to higher levels (typically of bureaucracy), noting that often long-term success of CPR governance was dependent on the relationship of local governance to higher levels (Ostrom 2008).

The choice to hold certain things fixed in each of these influential conceptual tools—including scalar levels—allowed for the systematic study of CPR governance systems, yielding groundbreaking insights into how institutions can emerge and endure, solving the seemingly intractable and nested collective action dilemmas predicted by others (Olson 1965, Hardin 1968). Simultaneously, each of these conceptual schemas rely on a vertical scalar ontology, positing hierarchical order as essential to developing a universal language and shared understanding of relationships. While neither explicitly mentions scale per se, these two frameworks exhibit how scale manifests even when not explicitly stated—a pre-existing schema ordering conceptual, jurisdictional and socio-spatial processes.

Surveying Scale in the Commons

By the early 2000s, the issue of scale was confronted directly by commons scholars, most notably in the seminal paper "*The concept of scale and the human dimensions of global change: a survey*" (Gibson et al. 2000). The authors surveyed different approaches to scale across a range of social and natural sciences, demonstrating that the concept of scale is integral to many disciplines yet often lacks a consistent definition. The social sciences in particular are marked by scalar imprecision, often employing the concept loosely and inconsistently (Gibson et al. 2000). Gibson et al. pinpoint the plurality of scale as a source of conceptual confusion among social scientists (both within and across different disciplines) and an impasse for interdisciplinary dialogue, particularly with natural scientists. The authors identify the concept of scale as vital to achieving a closer union between the social and natural sciences in addressing pressing issues of global environmental change (Ostrom 2009, Gibson et al. 2000).

Underdevelopment of the concept of scale in the social sciences was identified as a major hurdle stymying cross-disciplinary collaboration in the view of the authors.

To this end, Gibson et al. call for greater consistency and precision when using the concept of scale and they articulate their own "fundamentals of scale" for the commons as a way forward. Their approach to scale borrowed heavily from ecology, where scale is a core concept as the identification of ecological patterns explicitly relies on the spatial scale at which they are measured (Levin 1992, Gibson et al. 2000). Ecologists conscientiously divide themselves based on what conceptual level they focus on as organizing the ecological relationships that they study (e.g., individuals, populations, communities, ecosystems). Yet, nearly all ecologists conceptualize their systems as multi-level, with a focus on understanding complex webs of interrelations and feedbacks among levels which are often non-linear (Folke et al. 1996). Drawing on ecological terminology, Gibson et al. define scale as any dimension of measurement (analytic, spatial or temporal) used to measure and study phenomena. Any chosen scale will consist of several component features, including extent (the magnitude or size of a dimension used in measuring a phenomenon) and resolution (the precision with which you measure) (Gibson et al. 2000). Located along any scale are distinct levels or units of analysis—whether spatial levels, temporal time frames, or jurisdictional boundaries (Cash et al. 2006).

The authors discuss different ways of conceptually or causally ordering objects or processes along a given scale through the concept of hierarchy (Gibson et al. 2000). Nested hierarchies are composed of groups of objects or processes where higher-levels contain or are combinations of lower-level units but have properties of emergence (i.e., that phenomena at higher levels are more than sum of lower level entities) (Mayr, 1982, p. 65). Hierarchical scale characterizes many complex phenomena in natural social systems, where "larger units are not simple combinations of attributes of smaller units, but can show new, collective behaviors" (Gibson et al. 2000). They describe this type of hierarchical system[2] as especially relevant to global dilemmas and the commons, which are characterized by issues of emergence and are useful for conceptualizing the properties of multi-level CPR systems.

A common scalar framework in dialogue with ecologists

While multiple approaches to scale invariably exist in the wider field of the commons, the "fundamentals of scale" laid out by Gibson et al. (that scale is multi-level and hierarchical) made their mark upon the wider field of commons scholarship. Their fundamentals of scale are evident in several popular conceptual tools, such as the levels of analysis and design principles discussed previously. Their initial publication inspired more direct conversations about scale among commons scholars (e.g., Young 2006, Young et al. 2006, Cash et al. 2006, among others) and continues to influence the trajectory of the field today with over 1,100 Google scholar citations (searched on 4/22/2019). Alongside these efforts, others were already striving for greater dialogue with natural scientists through the study of social-ecological systems (Berkes, Colding, and Folke 2008; Berkes, Folke, and Colding 2000; Ostrom 2009), with implications for understandings of scale. Motivated by a practical interest in addressing sustainability through management, these commons scholars identified an urgent need to move beyond simple, single metric management tools commonly used. Instead, these scholars advocated for the study of complex interacting systems as a necessary step towards rethinking applied resource management and joined with ecological economists, ecologists, and others in this pursuit (Ostrom

[2] Specifically, constitutive hierarchies as opposed to exclusive hierarchies (Gibson et al. 2000).

2009). In this multidisciplinary dialogue, a clear and explicit scalar ontology modeled after ecologists proved useful in advancing the study of social-ecological systems.

This general effort to make social systems legible to natural sciences is exemplified in the development of the social-ecological systems framework (SESF) which laid out a conceptual schema and diagnostic tool to identify and separate components of interacting systems that "affect the incentives and actions of actors under diverse governance systems" (Ostrom 2009). In complex systems, many types of subsystems can be discerned (Berkes, Colding, and Folke 2008), and the SESF articulates these sub-systems as composed of interacting Governance Systems and Resource Systems that together comprise the core subsystem, which contains units of Users and Resources respectively (Ostrom 2009). This core sub-system is hierarchical, composed of nested tiers of further subsystems, where each subsequent level contains different types of variables. The framework was developed to help with the consistent identification of levels and appropriate variables in a given study area, with the goal of rendering cases legible across studies (Ostrom 2009). Therefore, SESF represents a third example, in this case a framework rooted in commons scholarship that is based on a shared conceptualization of scale as inherently multi-level and hierarchical.

Linking multi-level governance

Eschewing models of governance that posit systems as purely top-down (i.e., the state) or horizontal (i.e., the market), commons scholars typically focus on unpacking the dynamics that link multi-level systems[3] (Armitage 2008). Analysis typically focused on identifying, categorizing and evaluating interactions across scales and levels to understand how these dynamics affected different outcomes in a system (Cash et al. 2006). Broadly, these interactions of interest are often referred to as "links" that can be either "cross-level"—interactions among levels within a scale—or "cross-scale"—interactions across different scales (e.g., between spatial domains and jurisdictions) (Cash et al. 2006). A confetti of different terms are often at play to describe the relationships that span presumed scales and levels, including vertical interplay, scalar mismatch, scale pathologies, and cross-level or cross-scale symmetry or asymmetry (Young 2006; Cash et al. 2006; Adger, Brown, and Tompkins 2005; Armitage 2008). Within the emphasis on cross-scale and cross-level linkages, there is an overarching desire to identify generalizable scale dependent factors, developing typologies of cross-level or cross-scale links, and to identify the drivers of patterns of cross-level interactions (Young 2006).

Re-reading scale through the lens of critical geography

After contextualizing the historical underpinnings and intellectual merit of commons scholars' conceptualization of scale, we move to unpack several assumptions we see present in the underlying ontological stance and epistemological approach to scale in the commons. These assumptions include scale as bounded levels, as a hierarchical ordering frame, and as an ontological given. We review how these assumptions about scale shape the types of relationships that commons scholars tend to "see" and what is left out of view. Our critique comes from our reading of scale in critical geography. First, we provide a succinct (and inevitably simplified) summary of the scale debate in geography as background for our discussion of prevailing assumptions about scale in the commons.

[3] We acknowledge that commons scholarship is incredibly diverse and that many scholars continue to focus on local cases and outcomes by employing detailed case study methods rather than on multilevel dynamics necessarily.

Background on the scale debate in geography

Scale has played a pivotal role within the field of geography and is widely considered to be one of the disciplines' foundational concepts along with space, place, and environment (Harvey 1996, Howitt 1998, Marston et al. 2000). Despite its station at the core of the discipline's identity, scale has produced considerable confusion and debate within geography where the exact meaning of the term remains far from settled (MacKinnon 2008; Moore 2008). Physical geographers tend to share a joint approach to scale, where the concept is central to both the questions addressed and the methods employed. Physical geographers generally acknowledge different meanings in relation to scale, including cartographic scale (i.e., the relationship between the distance on a map to the corresponding distance on the ground), geographic scale (i.e., spatial extent of phenomenon studied), or operational scale (i.e., level at which a process operates; see Lam and Quattrochi 1992). Despite the indelible importance of scale to physical geography, the concept itself is treated as an implicit element of analyses more than an object of inquiry (Howitt 1998).

As opposed to assuming scale is conceptually equivalent to size (e.g., a census tract, watershed, local jurisdiction) or level (e.g., local, national, global), human geographers have focused on understanding the relational qualities of scale that in concert with space, place and environment interact to makeup the geographies we live in and study (Marston et al. 2000). In this pursuit, the overarching focus has been on understanding scale as a socially produced and contested phenomenon, rather than an entity that pre-exists social relations. Two distinct approaches have emerged within human geography that examine the social construction of scale rooted in political economy and post-structural traditions (MacKinnon 2008; Jones, Woodward, and Marston 2007; Marston 2000). What these two strands share is a commitment to a constructionist framework, rejecting the commonplace notion of scale as a naturalized category composed of preordained hierarchical levels (Marston 2000). Social constructionists do not assume that scale "presents itself", but rather that scale is *made*, and this making is not presumed to be a neutral process (Taylor 1987, 3). Instead of a naturally occurring entity that orders the world, scale is understood as a contingent outcome of social and physical processes, "the embodiment of social relations of empowerment and disempowerment and the arena in which they operate", and is therefore, always also political (Swyngedouw 1997, 169). Analytic emphasis is placed on understanding how particular scales become constituted and reconstituted in response to socio-spatial dynamics and to what effects (Marston 2000). Social constructionist approaches share with commons scholars an interest in relations of emergence, but they are not focused on what emerges *from* pre-existing scalar levels. Rather, they are concerned with *how the very appearance and organization of scale itself emerges* and shifts given different sociospatial conditions and to what effects.

The two constructionist traditions (political economy and post-structural) theorize and empirically approach the social construction of scale from different angles. Political economy perspectives on scale focus on the ways the production of scale is implicated in the production of space through the dynamics of capitalist production (Marston 2000). Rising to popularity in the 1990s, this shift overturned notions of scale imported from physical geography, where scale was long assumed to be "fixed and external to social processes" (McMaster and Sheppard 2004) and often focused on scale as size or level rather than relation (Howitt 1998). Instead, geographers in the political economy tradition no longer presumed scale pre-existed social relations, rather scale was understood as the product of "wider social, political, and economic processes, that are never invariably fixed, but always open to re-definition" (Swyngedouw 1997). Scales are the "materialization of contested social forces"

serving as platforms for specific kinds of social activities (Smith 1993, Smith 2000). However, in the tension between fluidity and fixity, political economy approaches often inadvertently end up presenting scale as immobile, molded by the relentless forces of the capitalist system with its all-encompassing ability to fix material life and social processes at certain levels (Marston 2000)[4].

In contrast to the materialist stance of the political economists, the post-structural turn in geography retained an interest in the social construction of scale but was critical of political economists' tendency to reify the existence of scale—where many analyses unconsciously presented scale as something durable and real that organized the world at the behest of capitalist forces of production (MacKinnon 2008, Gibson-Graham 2008). Presenting scale as fixed "conceptually separates scales from social practices", where scales remain where they are, but people, places or processes are re-ordered (Moore, 2008: 210). This partitioning allows for talk of "scale jumping" (Smith 1993, 1996), where certain individuals or groups are seemingly able to pick up and "move to higher levels of activity – for example, the urban to the national – in pursuit of their interests" (Mackinnon 2008). In contrast, post-structural approaches are more concerned with understanding scalar practices, politics, and performativity (Mansfield, 2005; Moore, 2008). In this approach scale is understood as "fundamentally an epistemological construct that presents specific sociospatial orderings", rather than something that is presumed to exist in the world (Moore, 2008: 204). Scale remains significant as a representational device or discursive frame, where scalar representations can still have material effects (Moore 2008), and analysis should emphasize how actors deploy different narratives or scalar frameworks and to what effects (Mackinnon 2008). Understanding how scale is constructed and operates through different social practices and discourse opens up new sets of issues unexplored by the political economists, including the use of scalar narratives and their performative effects, which can be multiple and contested (MacKinnon 2008).

In both traditions, conceptualizing scale as a socially constructed phenomenon does not mean that scale is treated as inconsequential. These approaches do not deny that scale is felt as "real" in the world. Rather, scale is understood to be "a contingent, contested social construct, like identity or the nation, that is continually being made and remade", open to different interpretations, experiences and possibilities (Moore 2008). Social construction of scale literature from human geography demonstrates how identifying and relinquishing deeply ingrained assumptions about scale can open this taken-for-granted category up to new sets of analytic questions, where "denying the ontological reality of scale does not mean it can't be a useful heuristic which we should attend to in how it operates" (Moore 2008). Therefore, while geographers have not settled on one consensus definition of scale, competing theories of scale have proven to be intellectually productive—deconstructing and overturning many commonplace assumptions about scale that cross-cut disciplines. In the coming section, we outline several assumptions about scale geographers have upended in both social constructionist traditions and consider how they operate in commons scholarship. In highlighting these assumptions, our intent is to open the concept of scale to broader dialogue through the inclusion of outside perspectives to generate new ways of theorizing about the commons.

[4] Within the political economy approach, internal critique has shifted the focus beyond the sole role of capitalist production, arguing for attention to the socio-spatial relations of reproduction and consumption (Marston 2000). Meanwhile others opt for a more "open" political economy of scale, that incorporates some insights from post-structuralism such as attention to scalar narratives (MacKinnon 2008).

Assumption 1: Scale as levels

The notion that scales are composed of distinct levels is a commonplace understanding of the spatial organization of the world that often appears as a taken for granted assumption in social scientists' research (Moore 2008). Rather than a social construct that is useful for the sake of certain types of analysis, scalar levels are often depicted as natural entities, a conceptual or "spatial organization that is simply given" (Taylor 1982). Further, these divisions are often presumed *a priori*, where complex processes are fit into pre-ordained levels—whether prescribed by frameworks, prevailing disciplinary norms or commonplace notions of scale. The tendency to divide scales into pre-sorted levels reduces complex relationships to a spatial grammar of containers, where levels are metaphorically understood as "bounded, areal units encompassing and defining the people and processes supposedly located within them" (Moore 2008). Repeated partitioning of social and ecological processes creates the illusion that levels actually contain different things: tangible resources, ecological processes, information, knowledge, power (Marston et al. 2005, Jones et al. 2007, Moore 2008, Allen 2011). Through common usage, we come to associate certain people and processes as *already* contained within certain levels: we may associate certain "economic macro-isms with 'global space' while other social practices (e.g., reproductive activities) are 'local'" (Marston 2000, Jones et al. 2007). The people, objects and processes we assign to levels are often assumed to be homogenous, sharing a degree of cohesion and similarity (Ley 2004; Marston et al. 2005). Subsequently, scalar levels often evoke pre-formed associations and tropes, such as "the local" is static and authentic, and "the global" is fluid and dynamic (Tsing 2000; Gibson-Graham 2002). Presuming homogeneity within levels collapses apparent unevenness and obscures variability, reducing and essentializing complex phenomena. This simplification has distinct advantages for the sake of observation and analysis, enabling comparisons across diverse CPRs. However, a consequence of this approach to scale is that a variety of sociospatial processes are flattened or neglected in the process, erasing multiple dimensions of difference among the people, places and processes we assign to putative scalar levels in analysis of the commons.

Reading for the assumption of "scale as level" in the commons

Early work on scale and the commons is explicit in stating that processes don't actually fit neatly into scalar levels, as elements in a complex system are also always constituted by what is conceptually above and below them (Gibson et al. 2000). Yet, many analyses proceed by treating scalar levels as containers for different variables and measured objects. For example, in Cash et al.'s (2006) review of scale dynamics, another seminal theoretical paper on scale in the commons, they describe knowledge as contained within levels: "Knowledge is often held, stored, and perceived differently at different levels, resulting from differences across levels about what is perceived as salient, credible, and legitimate knowledge, or what is perceived as the important scale or level of the problem, i.e., the plurality challenge". Cash et al.'s approach recognizes positionality and plurality of knowledge (i.e., that your standpoint matters and ways of knowing are multiple), and yet also implies that knowledge has durable "thing-like" qualities—an entity that can be contained and stored within levels. While the plurality of knowledge across different levels is acknowledged, the diversity of knowledge and ways of knowing within levels is obscured by this rendering of scale—leaving an image of difference arrayed among levels but relative homogeneity contained within a given level. Further, given the commitment to scalar levels, their solution to this scale challenge is the addition of intermediary levels or initiatives that enable knowledge co-production, cross-boundary coordination and translation (Cash et al. 2003, Cash et al. 2006)—assuming that any differences across levels can be transcended through appropriate links. While their paper highlights the challenges that come with multiple and competing ways of knowing in the

commons and may identify certain differences in knowledge across levels, it can erase substantive differences within levels and presents knowledge as akin to a storable resource.

As the example from Cash et al. (2006) demonstrates, analytic emphasis in the commons is often placed on finding links that represent connections (or the absence of connections) across presumed levels or scales. Yet, there is a lot of latitude in what a "link" is in the literature. Young et al. (2006) describe a typology of links as including: *de jure* or *de facto* dominance, separation, merger, negotiated agreement, and system change. They move on to posit a range of drivers behind different patterns of cross-level links, including power differentials, decentralization, dueling discourses, cognitive transitions, blocking coalitions. In many cases the types or variety of links in question are not differentiated, nor their qualitative characteristics unpacked or detailed. Instead links are counted, where the search is for links—of seemingly any kind—and the assumption is that more links are better as they signal more robust systems (Anderies et al. 2004) or that the presence of cross-level or cross-scale interactions among scale dependent regimes often results in negative patterns for resource regimes (Young 2006).

We argue that this tendency to treat scale as layered container-like levels reduces the diversity of relationships that constitute scaled processes in the commons and shifts the focus on the identification of links—a term often vaguely defined. Certainly, this approach has yielded fruitful insights into the overall workings of governance and social-ecological systems over time by holding certain things as fixed and contained within presumed levels, affording valuable insights into other types of dynamics of interest in the governance of the commons. Yet, as attention turns away from questions related to "local" governance into governance in a "multi-level" or "cross-scale" context, scale increasingly becomes the subject of interest and analysis. Yet ongoing assumptions risk obscuring other meaningful sources of difference and potential insights about the workings of the commons. While we do not discourage the general interest in understanding the relationships that constitute scaled processes, the term "links" is used broadly and at times obscurely, lacking consistent definitions, detailed descriptions, or rich empirical data to support the identification and categorization of meaningful relationships. We argue that the flattening of scale into separable levels that are presupposed to contain people, objects and processes of interest reduces the kinds of relationships we can see in analyses of the commons: if everything fits into a level and is contained, a lot of actors, practices and spaces that don't "fit" often get left out (Jones, Woodward, and Marston 2007; Jones 2009). Assuming scale is just so-many pre-existing categories directs analytic attention away from these "messier" processes and forms of difference in the commons and obscures the ways that different social and ecological processes are unevenly distributed across various scalar levels in dynamic and at times unpredictable ways.

Assumption 2: Scale as a hierarchical ordering frame

The assumption that scale is composed of separable levels is often deeply entangled with the concept of hierarchy. Many disciplines (e.g., economics, political science, sociology, geography) demonstrate ongoing ontological commitments to hierarchical scale, presenting scale as a vertical series of nested spaces or conceptual levels—evoking images of a Russian matryoshka doll, rungs on a ladder, or structural scaffolding (Herod and Wright 2002). At its simplest, vertical scale represents a binary composed of two parts: the top and the bottom (Marston et al. 2005). Within any binary frame—male-female, global-local, urban-rural—one group invariably serves as the dominant referent to its other, bound up with assumptions about size, agency, and power (Gibson-Graham 1996, Marston 2000,

Gibson-Graham 2002, Jones et al. 2007). Even when more intermediary levels are added (i.e., more rungs along the ladder), the relationship is still ordered from top to bottom (Jones et al. 2007). This ordering is problematic because questions of power and agency become intertwined with assumptions about scale and size where we assume more is up (Allen 2011). Gibson-Graham (1996, 2002) describe how this conflation of size and power is often innate and difficult to displace, where actors and events associated with higher-levels (e.g., the national scale, the global) are presumed to be more powerful, with a broader arena and repertoire of action, and lower-levels are presumed to be small and relatively power-less; "the global is penetrating, the local penetrated and transformed" (Gibson-Graham 2002; 27). Hierarchical ordering often suggests that power can be "read off" in advance, as it is exercised and flows one way, from top to bottom (Allen 2011). The coupling of assumptions about size, power, and agency that often accompanies hierarchical scale can serve to discredit apparently lower-level places and processes, disempowering local governance and bottom-up movements for political action (Gibson-Graham 2002). The prerogative often becomes one of upscaling, where to make a political movement, scientific conclusion or policy recommendation powerful, it *needs* to be scaled up. Working from a fixed, hierarchical scalar landscape directs attention away from the multiple and often subtler ways in which power is enacted through various modalities—not a uniform substance to be transmitted from top to bottom or center to periphery, but a relational effect of diverse social interactions (Allen 2011, 8).

Reading for the assumption of "scale as hierarchical ordering frame" in the commons

Commons scholars initially examined scaled processes from underneath, revealing the often-overlooked importance of local-level processes in sustainable resource governance (Ostrom 1990). Despite the initial focus on the local as an entry point to understanding broader multi-level processes, an ongoing commitment to hierarchical scale has pulled commons scholarship to scale up. Alongside the development of a vertical scalar ontology for the commons in the early 2000's (e.g., Gibson et al. 2000, Young 2002, Young 2006, Cash et al. 2006), we can also identify a parallel turn towards scaling up analysis and conclusions. This push to scale up is not unique to the commons, there was a marked turn in the wider environmental governance literature and the field of conservation to scale up to higher levels, such as the region or the globe (Reed and Bruynel 2010). Whereas earlier commons scholarship typically focused on using ethnographic observation and thick description to illustrate relationships that characterized enduring CPR systems across space and time, the simultaneous emphasis towards building large-N databases and quantitative methods in the commons has also embraced the hunt for causal facts that hold at higher scales (Agrawal 2002). Much of this charge to scale up was shaped by a desire for social science work on resource governance to be legible to natural scientists and practitioners in search of solutions to increasingly global problems (Ostrom 2009). But it also seems to be a turn that hasn't received enough critical attention and self-reflection in the field of the commons. While solving widespread social-ecological dilemmas is undeniably important—an area where commons scholars have made great contributions through interdisciplinary collaboration—assuming that scale is hierarchical, and that knowledge and interventions must be scaled up to be considered transformative in the face of global dilemmas risks creating analytic blind spots for commons scholars. Despite the field's origins privileging the perspective of the local in multi-level governance, with an ontological commitment to hierarchical scale it's difficult to evade the related assumptions about scale and power, and that scaling up is imperative and inherently more valuable in finding solutions to governing the commons.

Assumption 3: Scale as an ontological given

Scale is often treated as a "thing" that actually exists in the world, a tendency that most human geographers are critical of (Marston 2000; Jones, Woodward, and Marston 2007). Assuming scale is real or ontologically given it becomes an "ordered spatial imaginary onto which we project an endless number of phenomena and processes" (Jones, Woodward, and Marston 2007). This makes it "difficult not to think in terms of social relations and institutional arrangements that somehow fit" presumed scalar contours where "events and processes appear to come pre-sorted, ready to be inserted into the scalar apparatus at hand" (Marston et al. 2005, 422). Making assumptions about scale for the sake of observation and analysis of complex systems is often necessary and can help advance a research agenda in certain directions. We do not argue that treating scale as multi-level and hierarchical is never admissible or useful as it has been for the development of the commons field. However, when nested hierarchical scale is assumed to be the natural order of things rather than an epistemological choice, these properties are essentialized as inherent qualities of scale and the processes we study appear as if already scaled. As this approach to scale is embedded within frameworks and replicated without conscious reflection upon the limits and trade-offs that come with this approach, the existence of scale is reified as an ontological given and other ways of seeing and understanding scale in the commons are obscured.

Reading for "scale as an ontological given" in the commons

While in the early 2000's ambiguity around the concept of scale seemed to pose a threat to the legibility of commons scholarship, the articulation of a clear scalar ontology laid out by Gibson et al. (2000) and others came with its own consequences. In the pursuit of consistent definitions and a common dialogue with natural scientists, commons scholarship coalesced around a shared approach to scale that heavily borrowed from ecology. The ontological commitment to scale as a multi-level, hierarchical ordering frame is manifest in many popular frameworks and conceptual tools in use (e.g., SESF, levels of rules, the design principles) and aligned with the general push to scale up knowledge at the turn of the century (Ostrom 2009). As these frameworks became increasingly popular, what were once explicit epistemological choices about how to treat scale became taken-for-granted assumptions that scale "existed"—not an analytic choice with specific consequences, but a durable entity with inherent qualities. While much of the of the earlier, seminal work on scale and the commons is more explicit that scale is an epistemological construct rather than a real entity (see Gibson et al. 2000, Berkes et al. 1998), these choices became increasingly obscured in the proliferation of commons scholarship. Therefore, while scale shapes the types of relationships commons scholars tend to study and represent it is often depicted as a durable structure that already orders CPRs rather than an epistemological choice about how to represent them.

Borrowing insights from geography to rescale the commons

In this section we consider how relinquishing certain assumptions or "scalar rigidities" (Marston et al. 2005) could help unearth new dimensions of human-environment dynamics in the commons. We borrow these insights from the field of geography, where like the commons, scholars once shared a seemingly definitive conception of scale that has since diversified, bringing attention to different sites, relations and mobilities that constitute scale and scalar practices. First, we consider how the difference between scale as a category of analysis versus scale as everyday practice is a useful distinction for commons scholars that can help separate out our everyday notions of scale from our epistemological choices to use scale in analyses of the commons. Second, we consider how embracing the social

construction of scale allows for the exploration of forms of difference that are often obscured by assuming scale is ontologically given. Lastly, we discuss how letting go of the scaffolding of scalar hierarchy makes way for the analysis of new forms of mobility and emergence in the commons. We draw on examples from our own research on small-scale fisheries governance in Tanzania and Mexico to illustrate the value in a more expansive approach to scale for the analysis of difference, power and mobility in the commons.

Separating out scale as an analytic category from scale as everyday practice

Conceptual confusion and problems embedded in the literature on scale stems in part from the slippage between scale as a "category of practice" and scale as a "category of analysis" (Brubaker and Cooper 2000, Moore 2008). Like many terms, such as the "nation" or "ethnic group", scale feels deeply constitutive of common sense—a "folk sociology" or "intuitive fiction" (Hirschfield 1996, Brubaker and Cooper 2000, Smith 2004). Moore (2008) refers to these commonsense meanings as categories of practice: terms we are already intimate with through our daily experiences that come with some shared societal understanding of what these concepts mean. However, these terms also operate as categories of analysis across a range of disciplines, constructs that are underpinned by different theories which shape choices of measurement, analysis, and representation in the production of scientific knowledge. The problem occurs when we uncritically import our own categories of everyday practice for these terms into social science categories of analysis (Moore 2008). Moore (ibid) illustrates the issue at stake using the example of nations: "we should seek to explain the process in which national 'group-ness' crystalizes—by whom and through which practices the social fiction of ethnic and national groups that undergird the power of nationalist appeals take hold – not reproduce them in our own accounts" (Moore 2008). Therefore, rather than importing commonplace intuitive fictions about scale into our analysis of the commons, we should seek to understand why and how processes may appear to come already scaled, and to what effects. While there is an inherently close reciprocal relationship between categories of practice and analysis, the point is to be aware of the tendency to conflate these two uses of scale and to be conscious of the difference (Moore 2008).

Attention to scale as a category of analysis would encourage commons scholars to make their epistemological choices about scale more explicit and to actively reflect upon how these choices shape the ways that we represent our systems of study in light of other possibilities. Further, attention to scale as a category of practice unlocks new questions about how actors in the commons themselves confront scale: What are the everyday experiences of scale for different actors involved in commons governance? How do actors locate themselves within and make sense of scale? By conceptually separating out these distinct categories of scale, commons scholars could at once be more explicit about their own epistemological choices to represent scale while also exploring the potential plurality of scale in the commons, raising new questions about scale as a category of everyday experience—an underexplored area at present.

Examples from Tanzania and Mexico

For the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (SSF Guidelines)—the first global fisheries policy tool specifically designed for the small-scale sector—the main challenge is whether and how national-level implementation will unfold (Jentoft 2014). Tanzania is making progress towards implementation through a multi-stakeholder collaboration spearheaded by a woman known as "mama guidelines". Instead of presuming how scale shapes her mobility and ability to act in relation to fisheries governance reform, we asked her to describe her own experience of scale in relation to

fisheries governance. In her multiple roles as a local activist, national NGO director, and global representative of the fishing sector, she transcends scalar levels on a daily and hourly basis. Scalar boundaries are not clear structures she encounters and "jumps" between as she navigates her role in different policy arenas, rather these lines are blurred. However, it doesn't mean that scale is not meaningful. She described how jurisdictional boundaries in Tanzania impact her work, where she is able to overcome and transcend these boundaries at times (as a local NGO simultaneously involved in national implementation and global advocacy), and yet is also constrained by these structures as she encounters challenges working with the national fisheries bureaucracy as an outsider. At the same time, her role in global policy processes elevates her status in national policy negotiations beyond traditional hierarchies and notions of authority, where even high-ranking fisheries bureaucrats turn to her for knowledge about global policies such as the SSF Guidelines.

In Mexico, cooperatives are important actors in the governance of small-scale fisheries, partly as a result of a long history of state-led development that prioritized organization through cooperatives. Traditionally, cooperatives are considered local organizations–producing goods and organizing labor in localized economic activities. However, cooperatives in Mexico also form federations, which might be understood as "regional" organizations for representation and collective action. In turn, federations form confederations, which might be understood to operate at the "national" level to represent the interests of the wider sector (Garcia Lozano et al. 2019). Presuming a hierarchical scalar correspondence between these nested organizations and the "levels" at which they operate would provide a limited vision of what they actually do and the spatial consequences of their involvement in governance.

For instance, one federation in Baja California connects its cooperatives to markets as far as China, where it has a secondary office, while also negotiating with state and federal government agencies in the interests of their constituent cooperatives. The federation therefore works across pre-conceived spatial boundaries that might be imagined for a regional organization, partaking in the production of local, national and foreign relations between fisheries, markets, and government. The activities of the federation trouble the idea of a governance actor working at a singular level or scale. In addition, the federation plays an active role in the discursive production of the region of Baja California as a site for successful cooperativism in Mexico. Cooperatives in other parts of Mexico frequently describe the region in such terms. Staying attuned to the cooperative's own narratives about scale and how they see and depict their role within the federated framework of fisheries governance in Mexico is a valuable epistemological alternative to assuming how scale works and is understood.

Exploring the social construction of scale and overlooked sites and forms of difference

Greater awareness about how scale is depicted and mobilized in our analyses of the commons can help address the tendency to reify scale as an actually existing entity. Presenting scale as fixed into hierarchically ordered levels "directs attention away from the various social actors, practices involved, and spaces that don't 'fit' into the pre-ordained levels or appear to 'matter'" (Marston 2000). For example, commons work has had very little to say about sites such as the body and dimensions of difference such as class and gender (but see Clements recent work). Earlier political economy works in geography suffered a similar selective vision that "missed" these potential sites of social difference because they didn't fit within the prevailing scalar frame that focused on understanding forces of capitalist production (Marston 2000). Similarly, often commons scholarship has focused on the community or user group at the local level, composed of individuals with bounded rationality making their best choices in conditions with imperfect information (Ostrom 1990). Yet, this conceptualization of

community doesn't leave room to explore many of the differences within groups or to consider who may already be excluded by pre-existing group designations (but see Agrawal and Gibson 1999). Rather than people and places into the scalar levels prescribed by disciplinary norms and dominant frameworks, scale could be re-opened to new types of empirical questions: Who and what has been excluded through a commitment to a hierarchical scalar framework, and to what effects? How do social dimensions of difference, such as class or gender, constitute the commons? How does remaining open to the existence of scalar-levels below "the local", such as the household and the body, affect our understanding of the social construction of scale and the commons?

Examples from Tanzania and Mexico

Returning to the example of small-scale fisheries governance in Tanzania, at the local and national levels formally recognized user groups typically privilege direct resource harvesters who fish from small boats (Smith and Basurto 2019). However, this designation often excludes labor that occurs from shore, including fishing in the intertidal zone, seaweed and bivalve mariculture, and post-harvest processing, much of which is performed by women (Porter and Mbezi, 2010, Bradford and Katikiro 2019, Smith and Basurto 2019). As an often overlooked and underrepresented group, many women in the fishing sector lack access to formal political spaces and are denied representation in the governance of their CPRs (Weeratunge et al. 2010). In response, women often rely on informal spaces along the beach for their work or may be subject to tenuous land rights. Meanwhile other women use their own homesteads or informal collective spaces for their small-scale fishing enterprises. Due to a lack of basic protections and formal recognition as legitimate users, in many parts of the country women face a high degree of discrimination, harassment and even gender-based violence in completing their daily tasks of harvesting, buying and selling fish. The emotional and physical harassment women experience at the scale of the body is often a reason that women exit the sector altogether. Therefore, small-scale fisheries governance and daily resource extraction are shaped by gender relations and sites such as the household and the body, yet these spaces and relations are underrepresented in analysis of both formal and informal governance in the commons.

In the Mexico the general assemblies of the federated fishing cooperatives serve as a forum where actors from the government interact directly with fishers. The question and answer format of these meetings allows both fishers and government officials to address problems related to fisheries management and construct their own lines of argumentation. At these assemblies, fishers enter conversations with government officials on unequal footing, where the ultimate decision-making authority resides with federal agencies in charge of fisheries (Garcia Lozano et al. 2019). Yet fishers invite government actors to the assemblies of their organizations as a mechanism for fishers to express grievances and participate in the production of meanings and understanding of problems and potential solutions to fisheries governance (Garcia Lozano et al. 2019). The direct dialogue that ensues often challenges traditional notions of Mexican hierarchical politics and class, where anyone can request the floor to speak and be heard. In this process, fishers are able to make requests and ask for direct commitments from their officials at the highest levels of government authority, whom in turn describe the pressure of this direct engagement as being held in a "shooting range". Fishers often appeal to a sense of urgency in addressing fisheries problems and often speak with emotion where complaints and disagreements can become heated (Garcia Lozano et al. 2019). Fishers bolster their credibility by appealing to the social and historical significance of the sector in Mexico (referring to small-scale fisheries as a "social sector")—applying pressure to government officials who are present to do

something to stem fisheries declines and competition with the industrial sector. These assemblies serve as important political spaces where actors are able to transcend traditional class boundaries and lines of authority as they pursue different lines of argumentation about how to address problems in the governance of their CPRs.

Attending to mobility and emergence in the commons

Rather than approaching scale as a pre-formed scaffolding with levels that bound and contain heterogeneous elements in the commons, we can direct our attention towards the specific social-ecological processes and relations through which scale is produced. In order to better understand how relationships between diverse elements in the commons form, unfold and are at times reordered, relationalist approaches such as "assemblage thinking" (Allen 2011) offer one possible route worthy of exploration. Assemblages are "ensembles of heterogeneous elements" (Ong and Collier, 2005: 5) which are not fixed or stable but emerge and are enacted in practice and therefore cannot be characterized once and for all (Bueger 2014, 63). By replacing structural abstractions about scale with a concrete interest in the histories and processes by which actors and objects come together (i.e., assemblages are formed) and made to endure or change over time, assemblage thinking would allow commons scholars to trace how different "spatial forms, processes and order hold together" such as the appearance of hierarchical scale (Acuto and Curtis 2014, 10). Primed by an interest in process and relationships, assemblage is an "anti-structural concept that permits the researcher to speak of emergence, heterogeneity, the decentered and the ephemeral in nonetheless ordered social life" (Marcus and Sakaa 2006; 101). Therefore, we can speak of CPR systems as ordered by relationships of scale but simultaneously consider this apparent of structure as open-ended and always open to being reassembled.

In fact, early commons work was explicit about the relational nature of governance arrangements. Notions of the configurational nature of institutions can be found throughout the vast written corpus of writings of Vincent and Elinor Ostrom (Ostrom 1999, McGinnis 2000). Commons scholars conceive complex systems as dynamic and constituted through emergence, yet the presumed structural approach to scale and systemic order in relationships has focused the analytic vision on a limited range of motion in the commons. Assemblage thinking is one strategy that could be tactically applied to rescale the commons, exploring new perspectives on the lively configurations of natural and social worlds that comprise the commons beyond the scope of links that join relatively static and homogenous levels. A more relational approach to scale can accommodate commons scholars' dual interest in social and ecological actors and elements in a system while opening new lines of research into the contingent nature of these relationships and what holds them together (temporarily) into apparent configurations. For instance, scales of political interest are discursively produced by governance actors in arenas of negotiation such as international courts (McCarthy 2005), and the mobility or circulation of different actors, symbols, discourses, and forms of expertise give rise to the phenomena we understand as local or global (Blok 2014). Tracing these different meanings are mobilized is a promising starting point for understanding how scale is constituted in studies of the commons, which is likely to require new methodological approaches as well.

Examples from Tanzania and Mexico

The implementation of the SSF Guidelines in Tanzania is not a straightforward process of down scaling a pre-formed policy along a spatial and jurisdictional hierarchy from global to local. By attending to relations of mobility and thinking with assemblage we can remain open to different sets of questions

about what happens as this policy moves, where attention to movement forces us to think of policy as an unfinished and unfolding process to be followed where different sets of actors and interests are at play (Clark et al. 2015). Rather than treating the SSF Guidelines as an object, we can think of it as a "a bearer and generator of meanings" (Johnson and Hagstrom, 2005: 370) that is translated as it moves. As the guidelines are mobilized, relationships among actors and objects that comprise the current landscape of fisheries governance may be opened up to new alignments as this tool is negotiated in placed. The outcomes and effects of such negotiations and potential realignments of power is a process to be followed rather than presumed (Smith and Basurto 2019). In Tanzania, the process of implementing the SSF Guidelines is not a seamless act of down scaling a preformed policy. A local NGO leader instead described the SSF Guidelines as a mirror to look in and reflect on the present configurations of power and priorities in fisheries. Mobilizing the SSF Guidelines can create a "condition of possibility" (Spivak 2005) as this tool is translated in place, but the impacts of potential reconfigurations in the wider assemblage of fisheries governance cannot be determined in advance.

In Mexico, the regional authority achieved by the fisheries federations is not a discrete bloc of pre-formed decision-making powers—a coherent layer in the tiered hierarchy of fisheries governance. Instead, we can think of the federations as a type of regional assemblage—a relational effect of political interactions between a range of central, regional and local actors (Allen 2011). As a tangled assemblage of relationships and practices, we can seek to understand how this assemblage hangs together and work to unravel the ways that power and authority are negotiated through cross-cutting political relationships between actors both within and outside the organization (e.g., with central government officials, scientists, NGOs). Ethnographic research is ongoing (see Garcia Lozano et al. 2019) at the federation's assemblies to better understand the complex political mobilizations that take place in these spaces and how governance priorities and relations among actors are reconfigured in the process.

Conclusion

Commons scholars are increasingly interested in the dynamics of multi-level governance and cross-scalar institutional arrangements in CPR governance. The concept of scale is central to this and other areas of research in the wider field of the commons, yet the dominant approach to scale has imposed its own limitations upon the analytic vision. The purpose of this paper was to historically trace the treatment of scale by commons scholars, analyzing dominant patterns while exploring the relevance of some elements of scalar thinking from outside fields to enrich the ways we conceptualize, study and imagine the commons. Early commons scholars broke disciplinary norms and boundaries by charting a relatively radical approach to scale; studying scale from below, with a focus on the local. Simultaneously, the focus on understanding the dynamics of multi-level governance eschewed restrictive scalar silos that pigeonholed theorists into a singular frame of reference at that time. As the field further developed the focus on CPR governance in collaboration with natural scientists post-2000, a relatively stable approach to scale was established, one that conceived of scale as multi-level and hierarchical, emblazoned within several conceptual frameworks that remain popular.

While we acknowledge the intellectual merit and advantages of the present scalar ontology in commons scholarship, we argue that exploring new perspectives on scale and the commons can transform the ways we study and understand them, unveiling previously obscured relationships and questions. Borrowing notions of scale and assemblage thinking from outside the current terrain of the commons can destabilize reified notions of scalar levels and hierarchically order relationships while

prompting a new wave of attention to everyday experiences of scale, uncharted sites and relationships, and forms of mobility. We believe that unsettling the concept of scale can beget a new toolkit of analytic tactics for representing and studying the commons alongside a reconsideration of ontological assumptions.

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