REVIEW ARTICLE

Critical Commons Scholarship: A Typology

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Common-pool resource theory (CPR theory) emerged to understand the limitations of the tragedy of the commons narrative, and the theory of human behavior underlying it. Over time, diverse critiques of CPR theory have also emerged. Prominent critiques include inattention to power and coercion, assumptions that institutions can be crafted, and analyses that exclude history and context, among others. We label this literature critical commons scholarship. In this review paper, we define a typology of five types of critical commons scholarship. The functionalist critique (type 1) argues that a narrow focus on institutions that excludes history, context, and contingencies causes erroneous conclusions about the causes of resource sustainability. The apolitical management critique (type 2) argues that a focus on resource sustainability causes commons scholars to ignore how power is used to create and maintain inequalities through rules and norms structuring resource access. The methodological critique (type 3) argues that methodological incompatibilities, such as CPR theory's dependence on general, abstract models, necessarily prevent these scholars from responding to type 1 and type 2 critiques. The project of government critique (type 4) argues that common-pool resource theory is used to support neoliberal and hegemonic practices. Finally, the ethical critique (type 5) argues that common-pool resource theory is premised on problematic north-south relationships where expert scholars in the global north provide information to be consumed by "commoners" in the global south. Mainstream CPR theory has been limited in engaging with critical commons scholarship, but there are new tools (such as the social-ecological systems framework and the critical institutionalism approach) for addressing each type of critique. Our goal in developing this typology is to make critiques of CPR theory legible and potentially actionable, while acknowledging the challenges associated with addressing them.

Keywords: critical institutionalism; common-pool resources; natural resources; conservation; collective action; institutions; decentralization

Introduction

Common-pool resource (CPR) theory emerged (Feeny et al. 1990, Feeny, Hanna, and McEvoy 1996, Ostrom 2002) as a response to rational economic models that predicted inevitable overuse of property held in common by economically self-interested individuals. In contrast to the predictions of overuse and resource collapse from Gordon's bioeconomic models (1954) and Hardin's game theoretic model (1968), common-pool resource scholars have documented many examples of sustainable management by groups of resource users that have not required resource privatization or state control (Wade 1989, Ostrom 1990, Baland and Platteau 1996). Traditional commons scholarship (i.e., from the 1980s to 2000s) sought to understand the conditions under which commonly held resource use was sustainable, based on an empirical gestalt of case studies, economic games, and large-n statistical analyses (Ostrom, Gardner et al. 1994, Ostrom 1998, Ostrom, Dietz et al. 2002, Ostrom 2005). Starting around 2000, this work inspired a number of critiques from the fields of political ecology, anthropology, political science, peasant studies, development economics, human geography, as well as from within the commons field itself. Some of these critiques have informed and been integrated into what we label contemporary commons scholarship, i.e. from the 2000s to today. For example, there are new frameworks for analyzing how power shapes institutional arrangements (Kashwan, MacLean et al. 2019). Other critiques have been less readily integrated into contemporary commons theory, such as those that demand analytical attention to the embedded meaning

of resources (Whaley and Cleaver 2017). To make sense of the diversity of critiques, and the selective integration of these critiques into contemporary commons scholarship, we propose a four-tier typology of critiques. This paper defines these four types of critiques and discusses how contemporary commons scholarship has and has not addressed them. We hope that this typology serves as a tool to organize conversations among commons scholars from various theoretical lenses, and to help these scholars set a critical-contemporary research agenda.

Traditional commons scholarship, characterized by a focus on endogenous characteristics facilitating collective action, derived from case studies of relatively isolated and small-scale commons. A major finding was that resource users are frequently able to collectively generate rules for sustainable management of a commons (Wade 1989, Ostrom 1990, Baland and Platteau 1996). Much traditional commons scholarship sought to define the circumstances when sustainable management was likely, and to understand the mechanisms of collective action through multiple, mostly positivist, methods (Ostrom, Gardner et al. 1994, Ostrom, Dietz et al. 2002, Ostrom 2005, Poteete, Janssen et al. 2010), although see (McCay and Acheson 1987). Starting around 2000, critiques of commons scholarship began to emerge en force (Goldman 1997, Mosse 1997, Cleaver 2000, Campbell, Mandondo et al. 2001, Mehta, Leach et al. 2001, Johnson 2004). Early critiques focused on the inattention to history, path-dependence, power, external forces (policies, international trade, etc), and neocolonialism, as well as the overreliance on models of collective action, predictable behavior, and incentives. Since then, the field of critiques has grown wider. Through the 2000s and 2010s, some of these critiques have been addressed and incorporated into contemporary commons scholarship while others have not.

Several reviews have sought to bring order to the diverse critiques of commons scholarship. Saunders (2014) reviews critical commons scholarship to understand why the implementation of commons theory into "commons projects" often produces failed management in practice. From the critical scholarship, he identifies theoretical aspects of CPR theory that may have inadvertently led to implementation failures for commons projects, including a focus on individual rational resource users, efficiency, and functionality (Saunders 2014). Hall and coauthors (2014) and Cleaver and de Koning (2015) review and summarize a subset of critical commons scholarship that they label "Critical Institutionalism" (a narrower body of work concerned with institutions, not to be confused with the broader body of work that we label 'critiques of the commons'). Critical Institutionalism is an outgrowth of Cleaver's foundational critique that the institutions which regulate natural resource use are often happy accidents rather than logically crafted rules (Cleaver 2000, Cleaver 2002). Instead, Critical Institutionalism conceptualizes natural resource management institutions as complex, contextually dependent, historical, specific to place, changing, negotiated, and reflective of power dynamics (Hall et al. 2014, Cleaver and De Koning 2015). In their review, Hall et al. (2014) summarize three common concerns of Critical Institutionalism: the idea of the homogenous community, the avoidance of politics, and socially inadequate analyses. These and other reviews have thus organized critiques by topic (scale, power, etc), which has allowed these reviews to summarize disparate works, identify commonalities, and summarize key debates (Goldman 1997, Roth 2009, Hall et al. 2014, Cleaver and De Koning 2015, Whaley and Cleaver 2017).

A common strategy of previous reviews is the distinction between two camps of commons scholars: mainstream and critical (Mosse 1997, Mehta, Leach et al. 2001, Johnson 2004, Agrawal 2005). Johnson's paper on the "poverty of history" (2004) is one of the seminal works that distinguished between the two threads, identifying "collective action" (mainstream) scholars who were primarily concerned with the sustainability of the resource itself, and "entitlement" (critical) scholars who were primarily interested in ensuring access to resources for poor and marginalized people (Johnson 2004). The differentiation between mainstream and critical work continues to be highlighted in some contemporary commons scholarship (Roth 2009, Cleaver 2012, Hall et al. 2014, Cleaver and De Koning 2015, Whaley and Cleaver 2017; see **Table 1**). This is evidence that some critiques continue to stymie integration, and is also evidence of the continued interest (and frustration) of critical perspectives in engagement with commons scholarship. However, these binary categories fail to recognize the evolving reality of much contemporary commons scholarship that defies categorization as mainstream or critical. For example, empirical works by Jones (2015) and Chowns (2015) analyze local-level institutional change (an interest of the mainstream) within a broader framework that engages with scale and external actors (interests of the critics). Furthermore, categorizing authors as mainstream or critical does not provide enough analytical variation to suggest why some critiques have had an influence on contemporary commons scholarship while others have not.

Our review differs on two counts from those previous. Rather than distinguish between two camps of commons scholarship (mainstream and critical, **Table 1**), our review recognizes that these camps have

Table 1: Labels defining two camps of commons scholars. Since 1997 and through 2017, authors (listed in the right column) continue to differentiate between two camps of commons scholarship, a critical one and a mainstream one. This review avoids these binary labels.

Year(s) published	Mainstream	Critical	Author
1997	economic-institutional explanations	sociological-historical explanations	Mosse 1997
2001	mainstream approach	emerging or post-institutionalist approach	Mehta, Leach et al. 2001
2004	collective action scholars	entitlement scholars	Johnson 2004
2005	common property scholars	political ecology scholars	Agrawal 2005
2009	mainstream institutional economics approach	alternative social anthropological approach	Roth 2009
2012, 2014, 2015, 2017	mainstream institutionalism	critical institutionalism	Cleaver 2012, Hall et al. 2014, Cleaver and De Koning 2015, Whaley and Cleaver 2017

Table 2: Summary of the four types of critiques of commons scholarship.

Type	Name	Main Idea
1	Functional	By focusing narrowly on institutions and property rights, CPR scholars are misattributing resource successes and/or failures. Their analyses are functionally incorrect in diagnosing commons sustainability.
2	Apolitical	By focusing on institutions and property rights, CPR scholars ignore the politics that created and maintain those institutions, with the associated costs and benefits for different groups of people
3	Methodological	The generalizing, positivist methods that commons scholars use limit their analyses, and constrain their ability to address Type 1 and 2 critiques
4	Normative	Although commons scholars claim to re-envision management of common property, they operate under neoliberal assumptions and contribute to coercion and hegemony; they exist under the normative assumption that sustainable management is an objectively defined good

overlapped and evolved together. The typology here allows us to examine the engagement and crossovers that have happened, in part as a result of early critiques. Also in contrast to previous reviews, we organize critiques of the commons by types instead of topics. Unlike topics (scale, power, etc.), types indicate particular analytical, methodological, or ontological assumptions that suggest why certain types of critiques have been well-incorporated (such as type 2, the apolitical critique) while others have not been (such as type 4, the normative critique). We propose this classification to help make critiques of the commons more legible and actionable. Lack of legibility is one of the most significant barriers to the incorporation and coevolution of critiques into contemporary commons scholarship (Hall et al. 2014), particularly for critiques that are contextualized, complex, and do not provide ready policy recommendations (Cleaver 2012, Hall et al. 2014, Saunders 2014, Mehta et al. 2001).

Table 2, below, summarizes the typology. This typology arises from collaboration between a commons scholar and a political ecologist; it is not a systematic review of the literature. Rather, we developed the four types from reading the commons literature and its critiques and discussing commonalities. Because our types are broad, we suspect that many papers we did not review could be accommodated within the typology. In the rest of this paper, we define each type and discuss how contemporary commons scholarship has addressed it. We conclude with a reflection on similarities between critiques and the role of critical voices in the evolution and development of a robust agenda for commons scholarship.

Type 1: The Functional Critique

The functional critique accepts most of the assumptions and concerns of traditional commons scholarship (e.g., desire to understand how and why commons management regimes succeed or fail), but claims that

traditional commons scholarship gets the analysis wrong due to the narrow focus on institutions and property rights. This focus leads to the misdiagnosis and prescription of inappropriate solutions for resource problems. In contrast, functional critiques argue that many successful common resource management systems (including the institutions and property rights governing them) are the result of and embedded in historical, political, and other contexts rather than the 'right fit' of institutions. These critiques question the explanatory and predictive power of common-pool resource theory (Saunders 2014). This argument is typified by Campbell and coauthors (2001), Cleaver (2000), and McCay and Jentoft (1998). The functional critique has substantially influenced contemporary commons scholarship, which has expanded its analyses using the Social-Ecological Systems (SES) Framework (Ostrom 2009, McGinnis and Ostrom 2014) and found diverse ways of including historical, political, and path-dependent explanations for successful or failed resource management (Hall, Cleaver et al. 2014, Cleaver and de Koning 2015, Jones 2015).

Campbell and coauthors (2001) exemplify the functional critique. The authors describe a case of communally managed woodlands and grazing areas in Zimbabwe, where lands had been managed by a diverse set of formal and informal national and local institutions, such as bylaws, garden committee constitutions, sacred controls, and civil controls. The authors explain that this diversity of rules was partly a result of a sweeping decentralization trend – a trend motivated by traditional commons scholarship, which connected decentralization with local empowerment and improved management outcomes in various cases (Campbell et al. 2001). However, Campbell and coauthors (2001) found that local empowerment was actively hindered rather than facilitated by decentralization. Although local institutions proliferated, federal grants to local groups decreased with decentralization, with the assumption that local tax revenues would make up for the difference. Instead, growing impoverishment reduced the tax base and resulted in reduced funds at the local level. Furthermore, the resulting diverse sets of rules added layers of bureaucracy to an already-complex system of management. This resulted in power being devolved to groups without the capacity to undertake the proposed community-based natural resource management (Campbell et al. 2001).

This critique is functional because the dominant argument that Campbell and coauthors (2001) make is that a narrow focus on institutions limits an intervention's ability to improve management. As additional evidence, Campbell and coauthors document a number of resource management failures in the wake of similar interventions supposedly rooted in common-pool resource theory. Thus, they call for common-pool resource theory to attend to context including history, the micro-politics of resource use, transaction costs, local household economies, socio-cultural dynamics, and ecologies, within which an institutional analysis can be more carefully applied. They propose that such scholarship would be more effective and "will result in [common-pool resource] management being approached with in-depth analysis and careful consideration" (Campbell et al. 2001, p. 596). To some extent, Campbell and coauthors levy their critique at decentralization as a specific application of commons scholarship, rather than common-pool resource theory itself. Some scholars argue that fundamental aspects of common-pool resource theory (e.g., simplified context, focus on individuals and incentives) make it prone to this type of misapplication (Saunders 2014).

In another example of the functional critique, Cleaver (2000) examines communal water holes and underground streams in Zimbabwe, managed for both income-generating and domestic purposes. In her analysis of the institutions that structure the use of the water, she identifies many watering holes that have been successfully self-managed in spite of water scarcity. However, she argues that a traditional commons institution-centric explanation for successful water management would be wrong.

Cleaver argues that traditional commons scholarship makes problematic assumptions about institutions: that they can be crafted, and that they are primarily resource-oriented (Cleaver 2000). The first assumption does not recognize the importance of path-dependency in the formation of sustainable resource management institutions. Instead, Cleaver argues that institutions are context-dependent and embedded in historical relationships and practices. Cleaver's case study also challenged the second assumption that institutions are primarily resource-oriented. Cleaver found that long (12+ hour) meetings about water management often were thought of as opportunities to come together as a village and discuss village matters, rather than being primarily about environmental and resource management. Indeed, many of the water management institutions she studied were maintained for reasons unrelated to resource management. She argues that the interrelatedness of non-resource-centric goals and resource-sustaining institutions is ignored by traditional commons scholarship (Cleaver 2000).

Cleaver's critiques are functional because they identify ways that traditional commons scholars fail to accurately diagnose why resource management regimes succeed or fail. She claims that traditional commons scholarship misrepresents the embedded origins and complex maintenance of institutions, leading to false expectations about the potential for crafting or designing institutions for sustainable resource management.

The functional critique was used by a variety of critical voices from the late 1990s and early 2000s. For example, Stubbs (2005) examined the application of commons theory to multi-level governance in southeastern Europe. He argued that the abstract modeling perspective of commons theory would render its blanket application to management full of pitfalls and errors. McCay and Jentoft (2000) call for a "thicker" approach to common property theory that includes the embeddedness of actors (including their culture, economy, ecology, politics, and community). McCay and Jentoft argue that commons scholars should analyze how relationships between actors, their communities, and larger political-economic context mediate how resources are managed. This, they argue, will allow for a better understanding of why and when resource management leads to "failure" (McCay and Jentoft 2000).

Functional critiques focus on the explanatory power of traditional commons theory. They tend to use data to demonstrate the shortcomings of a property rights or institutional explanation. Because they retain many of the assumptions of traditional common-pool resource theory, including an underlying normative assumption that sustainable resource management is possible and can be objectively determined, these critiques are generally hopeful and suggest solutions. For example, the paper by Campbell and colleagues ends with a section titled, "The Way Forward" (Campbell et al. 2001), and Cleaver ends by detailing an alternative "Moral Ecological Framework" (Cleaver 2000). Because of these characteristics, contemporary commons scholarship has found diverse ways to address the type 1 critique. Two popular examples of such analytical tools are the Critical Institutionalism approach (Hall et al. 2014, Cleaver and de Koning 2015) and the social-ecological systems (SES) framework (Ostrom 2009).

A Critical Institutionalism approach assumes that institutions are plural, complex, dynamic, and contingent, and it questions the agency and decision-making of actors (Hall, Cleaver et al. 2014, Cleaver and de Koning 2015). This approach requires scholars to examine the history of different institutions, understand their purpose beyond resource management, and understand how these institutions privilege certain interests above others (Hall et al. 2014, Cleaver and de Koning 2015). To do this, it has been helpful for commons scholars to have long experience with a case or to collaborate with those who do. For example, Jones (2015) in his study of water services in Mali retains institutions at the core of his study, but contextualizes institutional change in a framework that includes scale, external actors, and institutional bricolage. He describes a case where the formal "unimplementable" institutions governing water services did not accomplish their intended goals, and yet water distribution was more effective than national averages. This was possible through institutional bricolage (also called "practical hybridity" and "purposive muddling through") by a complex net of actors including NGOs, external funders, local committees, and national laws who used formal rules as signals and negotiated locally-relevant rules (Jones 2015).

The SES framework (Ostrom 2009) is another tool that contemporary commons scholars have used to respond to the functional critique while retaining common-pool resource sustainability at the core (Basurto, Gelcich et al. 2013, McGinnis and Ostrom 2014, Schlüter, Hinkel et al. 2014, Leslie, Basurto et al. 2015). The SES framework includes many social and ecological variables that contextualize institutions *in situ*, including the politico-economic context, nongovernmental actors, varying rules, the ecology of the resource, and characteristics of the resource users. If the SES framework is considered a starting point in analysis rather than a checklist (Basurto, Gelcich, and Ostrom 2013), then it can be used to incorporate many of the aspects of Critical Institutionalism, including history, plurality, and complexity (Ostrom 2009, McGinnis and Ostrom 2014). One important contribution of the SES framework that Critical Institutionalism ignores is that it gives agency to the resource and the ecosystem, which often structure how users access and make rules about the resource (Basurto 2008). One example of using the SES framework to address the functional critique is Basurto et al. 2013, who use the SES framework in two cases of benthic fisheries to understand the conditions that led to CPR sustainability given complex, nonlinear, and evolving governance (Basurto, Gelcich, and Ostrom 2013).

According to Saunders (2014), the implementation of commons projects continues to have a mixed performance in practice. One explanation is that commons projects frequently occur in contexts that violate key assumptions under which common-pool resource theory was developed (Saunders 2014). A relevant empirical question of contemporary commons scholarship is whether the theoretical findings of common-pool resource theory – developed in small, relatively isolated resource contexts – can hold across other contexts (e.g., global commons). It seems like some aspects of the theory do hold (Cox, Villamayor-Tomas et al. 2016). For example, work on large-scale commons like tuna and national-scale forests has suggested that some of Ostrom's design principles (boundaries, monitoring, sanctions, fit to conditions, and conflict resolution mechanism) but not others (recognition of rights to organize and the accountability of monitors to resource users) are important for large-scale commons (Fleischman, Ban et al. 2014, Fleischman, Loken

et al. 2014). One important role for commons scholars moving forward to address the functional critique will be to determine what characteristics (such as design principles or others) are associated with the successful implementation of commons projects.

Type 2: The Apolitical Critique

The apolitical critique argues that, by focusing the analytical lens on the individual action situation, traditional commons scholarship ignores the broader politics and power underlying resource management. These critiques draw attention to the interests that create and maintain resource management institutions, regardless of whether the resource is managed sustainably or not. Key concerns include structural inequality in resource management scenarios, winners and losers, and how power shapes outcomes. While traditional commons theory intentionally steered away from an analytical lens that centered power, which it found to be limiting (Boettke and Aligica 2009), critics have argued that no analysis of environmental management is complete without attention to who profits and who pays (Agrawal 2003, Robbins 2004, Agrawal 2014). Critics argue that over-attention to internal dynamics obscures the power structures that frequently mediate resource management (Mosse 1997). We discuss three works (Mosse 1997, Ribot and Peluso 2003, and Agrawal 2003) as archetypes of the Type 2 critique, and then explore how contemporary commons scholarship has dealt with power.

Anthropologist David Mosse (Mosse 1997, Mosse 1998, Mosse 2003, Mosse 2006) was an early critic of common-pool resource theory lacking attention to power. He argued that collective action around natural resources was premised on isolated and ahistorical "apolitical localities" where internal economic and ecological dynamics predicted success or failure of the collective management. Mosse's work on tank-irrigated landscapes in south India (1997) suggested a different explanation, a political one. Success or failure to maintain collective water tanks was a result of complex interactions of ecology and economies with caste, colonialism, hierarchy, and migration (Mosse 1997). Politics were important both internally and externally. Externally, communal tanks were often maintained by significant investment and enforcement by state actors who had interests in their maintenance; these tank systems were not isolated decision-making centers. Internally, communal tanks had in previous eras been maintained by enforcing a structured and hierarchical caste system at the expense of the poor and also women, who were excluded from management entirely. Mosse cautions thus that high levels of rule following do not necessarily suggest high collective action – in the case of these tanks, high rule following implied coercive and hierarchical control (Mosse 1997). The breakdown of traditional management institutions in some cases implied greater equality. Furthermore, Mosse emphasizes that tanks were more important as symbolic political sites than as sources of material goods: in some cases tank management allowed local leaders to further assert hegemonic control, while in others they were sites of resistance and equality. In some ways, Mosse makes a functional critique: that traditional commons scholarship misses the explanatory factor leading to success or failure. But Mosse's critique also goes beyond the functional critique because he directs attention beyond resource sustainability to the systems' other features: equality, distribution, and broader political structure (Mosse 1997).

In his critical assessment of common-pool resource theory, Arun Agrawal expands on power and the outcomes of commons management systems (Agrawal 2003). In his critique, Agrawal draws on Knight's theoretical work on institutions (Knight 1992). In contrast to dominant ideas that management institutions emerge for the common good, Knight uses game theory to suggest that powerful actors create institutions that necessarily reproduce and maintain unequal power relationships, even if they lead to resource sustainability (Knight 1992). Agrawal applies this to traditional commons scholarship specifically, arguing that resource management institutions may lead to unequal allocation of benefits "not as a by-product but as a necessary consequence!" (Agrawal 2003 p. 257). He points to the possibility that "all successful enforcement institutions are also coercive" and argues for greater attention to resistance and domination, especially as in the studies of subaltern and poststructuralist scholars, to understand how power structures the outcomes of resource management and also how those outcomes are contested (Agrawal 2003).

Where Mosse and Agrawal emphasized attention to power in the inputs and outcomes of commons management, Jesse Ribot and Nancy Peluso (2003) called for greater attention to power within the mechanics of the theory itself. Ribot and Peluso (2003) were some of the first to explicitly include power in a property rights definition. They argue that common-pool resource theory should conceptualize property rights not as a "bundle of rights", but as a "bundle of powers" (Ribot and Peluso 2003). Calling to attention the difference between rights and abilities, they argue that access to common resources should be defined as "the ability to derive benefits from things" rather than "the right to benefit from things" (Ribot and Peluso 2003, p. 160). They identify power structures that maintain abilities to access common resources, e.g. through limiting

access to markets or capital. Their critique provides an alternative theory of access that includes power to attain rights, illegally access resources, obtain capital, obtain technology, access markets, and access labor, among others.

Type 2 critiques argue that, regardless of the functional management outcomes of various institutional arrangements, the underlying power structures are important. Unequal power structures can engender institutions that symbolically uphold hierarchical systems (Mosse 1997), maintain unequal power structures (Knight 1992), vilify resistance as anti-commons (Agrawal 2003), and mediate how actors obtain access to resources (Ribot and Peluso 2003). The apolitical critique is common throughout critical commons scholarship, and is for example one of the three major themes of Critical Institutionalism identified by Hall and coauthors (Hall et al. 2014). Works examining power and common resource institutions have looked at intersections with gender (Cashman 1991) and wealth (Springate-Baginski et al. 1999). Political ecologists, concerned broadly with the search for politics and power in environmental interventions (Robbins 2004), have been prolific in critiquing common-pool resource theory's apolitical view of natural resource management (Robbins 2004, Blaikie 2006, West, Igoe, and Brockington 2006, Brockington, Sachedina, and Schoffield 2008, Igoe, Neves, and Brockington 2010, Büscher et al. 2017). A major contribution of the Type 2 critique is to question the assumption that natural resource management is good without asking, management for whom and by whom?

Contemporary commons scholars have responded in diverse ways to the prolific apolitical critique. Part of this response has been to shift focus, and part of the response has been the emergence of new analytical tools. Engaging with the type 2 critique means that sustainability is no longer the only focus, instead expanding to consider justice and equitability of outcomes. Some critical scholars argue that, to properly address the apolitical critique, this new focus must be "*centrally concerned* with the problem of inequality, and with the ways in which formal and informal rules create and reinforce unequal access to common-pool resources" (Johnson 2004, original emphasis). To do this, commons scholars have included power in their research questions, collected data on how management outcomes create winners and losers, and examined the politics of creating and maintaining management institutions. In response to Agrawal's concern (2003) that that distributional inequality may be a necessary outcome of sustainable commons institutions, new studies have used theoretical and empirical insights to demonstrate that power asymmetry and elite capture are likely necessary for commons sustainability because of the important role of leaders in collecting information and performing other roles to maintain collective action (Kashwan 2016). Kashwan (2016) notes that power asymmetries are robust and ubiquitous. Indeed, such power asymmetries may be maintained even when equality is necessary for collective action, for example the 'muting and unmuting' of caste in watershed management in India, where caste hierarchies are relaxed to maintain collective action for watershed management but caste is still strongly maintained in other social arenas (Mudliar and Koontz 2018).

There are a multitude of analytical tools for including power in commons analyses (Brisbois, Morris, and de Loë 2019, Clement 2010, Robbins 2004), although including power may be challenging for scholars who are not trained in power theory (Brisbois, Morris, and de Loë 2019). Political ecology, which explicitly examines how power affects human-environmental linkages, has identified frequent patterns, such as the degradation-marginalization and conservation-control patterns (Robbins 2004). These have been good starting points for commons scholars to assess the winners and losers from a given commons management scheme. A full discussion of how contemporary commons scholars can learn from the field of political ecology to integrate power can be found in Bennett, Acton et al. (2018). Floriane Clement's "politicized" Institutional Analysis and Development (IAD) framework (Clement 2010) adds the variables of discourse and political-economic context into Ostrom's famous framework for understanding institutional diversity (Ostrom 2005). Others argue that it is insufficient for commons scholars unfamiliar with power theory to simply add variables to their framework (Epstein et al. 2014, Brisbois, Morris, and de Loë 2019). Epstein and coauthors demonstrate how diverse conceptualizations of power can be systematically incorporated into frameworks for understanding common-pool resource management (Epstein et al. 2014). Brisbois and coauthors use yet another approach, drawing on Lukes' (1974) three dimensions of power to show how both visible and hidden forms of power can be analyzed using the IAD framework (Brisbois, Morris, and de Loë 2019). They provide a useful table that maps Lukes' dimensions of power (power to prevail against opposition, power to set the agenda, and structural-normative power) onto the IAD framework (Brisbois, Morris, and de Loë 2019). Similarly, in an introduction to a special issue on power and institutions in *World Development*, Kashwan and coauthors describe a detailed matrix of the different potential types of power regarding institutions, with three dimensions of power for each of four types of power: power over,

cooptation from below, institution crafting, and counter-power or resistance (2018). The following special issue provides a number of examples of studies that investigate power and institutions at a range of scales and in many contexts (Brisbois, Morris et al. 2019, García-López 2018, Kashwan, MacLean et al. 2019).

However, despite new tools for integrating power in analyses of the commons, there are deeper and persistent problems. The evidence is in the continued identification of two camps of commons scholars, one critical and one mainstream (Hall, Cleaver et al. 2014, Cleaver and de Koning 2015, Whaley and Cleaver 2017) and in the continued struggles in incorporating power in contemporary commons scholarship (Epstein, Bennett et al. 2014, Cleaver and de Koning 2015, Bennett, Acton et al. 2018, Brisbois, Morris et al. 2019). Scholars provide many reasons. We divide these reasons into our next two types. Type 3 critiques point to methodological constraints while type 4 critiques point to a normative premise.

Type 3: The Methodological Critique

The methodological critique argues that traditional commons scholars' methods rooted in positivism restrict their questions, analysis, and conclusions, limiting their ability to seriously engage with embedded, historical, and contextual approaches (Johnson 2004). Johnson (2004) typifies the methodology critique, which can also be found in Agrawal (2003), Fabinyi et al. (2015), and Stubbs (2005). We first discuss the archetype (Johnson 2004), and then discuss variations on the methodological critique from other scholars.

Johnson (2004) traces the "poverty of history" in common-pool resource theory, explaining why methodological constraints limit engagement with critiques that we categorize as functional or apolitical. He first discusses the emergence of the field in response to Hardin's tragedy of the commons (1968), and explains how scholarship rooted in rational choice, game theory, and organizational theory came to draw causal relationships between property rights and common-pool resources. Johnson discusses three classic texts that generalized from failed and successful resource commons to identify characteristics associated with sustainability (Ostrom 1990, Baland and Platteau 1996, Wade 1989). These works laid the foundation for a body of scholarship that aims to be empirical, predictive, falsifiable, and produce generalizable results. Models and variables – often but not always facets of traditional commons scholarship – are necessarily abstracted from context. Johnson argues that this removal of context creates a "poverty of history" in common property theory. He explains that, although commons scholars like Ostrom and Wade use history in their articles, they use history as data to test models of individual behavior. This is very different from an epistemology that tells history as a specific (rather than general) explanatory story in and of itself. By seeking to develop formal theory that relates specific causal variables to the durability of common property regimes, as Agrawal (2001) calls for, Johnson (2004) claimed that commons scholars methodologically limit themselves to establishing causal and general inferences.

Johnson (2004) ties methodological constraints to the inability to address what we have categorized as type 1 and type 2 critiques. Johnson argues that, by limiting themselves to general phenomena, mainstream commons scholars are often unable to accurately diagnose common-pool resource problems (type 1 critique), since they cannot collect data on important contingent and historical reasons for failed or successful management. Johnson also argues that commons scholars are unable to study power (type 2 critique), since power relationships are often situated in specific histories and contexts that are external to variables under study.

Type 3 critiques are also advanced by Agrawal (2003) and Stubbs (2005). Agrawal (2003) argues that dependence on case studies and abstraction from their results has led commons scholars to disagree about the institutional conditions that lead to sustainable resource use. He argues that there are too many relevant variables to examine statistically using deductive and positivist techniques, with at least 24 variables identified by Wade (1989), Ostrom (1990), and Baland and Platteau (1996), all of which may interact to produce different results. He also argues that a focus on causal factors limits commons scholars' ability to engage with power; he thus calls on more engagement with the humanities and methods of the humanities to explore topics like resistance. Echoing Agrawal, Stubbs (2005) critiques commons scholars for being too dependent on abstract modeling. He argues that most scholars, in their governance models, use only two-dimensional models with few variables founded on little data, limiting these models' ability to address complexity or extrapolate to other cases (Stubbs 2005). The methodological critique is one explanation for the continued divide (Hall et al. 2014, Cleaver and de Koning 2015) between mainstream and critical CPR scholarship. Using positivist science based on abstract models, commons scholars search for predictions and generalities rather than histories and contingencies. This makes them susceptible to missing the historical factors that made institutions "work" for sustainability (e.g. Cleaver 2000) and the missing pieces that lead to contingent failure (e.g. Campbell et al. 2001). This positivist framing likewise

causes them to attribute a "premature normativism" to resource management; that is, they assume that long-term sustainability is good and desirable before analysis (Stubbs 2005). Stubbs argues that this leads to inattention towards power relationships and dynamics surrounding management (e.g. Fabinyi et al. 2015).

At the core of the methodological critique is a critique of positivist social science. Positivism – the idea that the truth of the world's functioning can best be understood through assessment of observations using the scientific method – has been thoroughly critiqued by social scientists and philosophers since the mid-twentieth century because of its focus on objectivity, observational accuracy, and certainty (Popper 1959, Giddens 1977, Johnson 2006). However, it is naïve to suggest that traditional commons scholars did not question the application of positivist social science to understand collective action. Ostrom herself was a critic of positivism (Forsyth and Johnson 2014), for example writing a chapter called "Beyond Positivism" in her book on methods of political science (Ostrom 1982). Ostrom and others were careful to qualify their findings. Yet, the attempt to make empirical, falsifiable, and generalizable claims regarding commons sustainability did characterize traditional commons scholarship (Wade 1989, Ostrom 1990, Ostrom, Gardner et al. 1994) and continues to be reflected, for example through the use of economic games to understand human behavior (Poteete, Janssen et al. 2010). Even the rise of 'triangulation' of multiple methods (Poteete, Janssen et al. 2010) has been called a "Trojan horse" for positivism (Giddings and Grant 2007). Positivism has been both a strength and a weakness of common scholarship: a strength for generating robust diagnostics with high legibility for policy, and a weakness for limiting its engagement with embedded, historical, and poststructuralist critiques.

Engaging with type 3 critiques requires a deep commitment to methodological training or cross-disciplinary collaboration. Johnson (2004) calls for engaging with history and postmodernism; Agrawal (2003) calls for subjective methodologies from the humanities; Fabinyi and coauthors (2015) call for a well-being approach based on ethnography; and Stubbs (2005) calls for inductive case comparisons. Commons scholars can either converge or complement with such methodologies. To converge with critical scholars on new methods, they will have to be trained in methods like ethnography, case study, inductive science, grounded theory, and historical analysis (Poteete, Janssen, and Ostrom 2010). Some scholars have led the forefront on converging mainstream and critical scholars' methodologies, such as Tine De Moor's historical analysis of land commons and commoners in western Europe (De Moor 2009, 2011). However, general methodological convergence of all commons scholars seems unlikely (Johnson 2004, Gruby and Basurto 2014). There are great challenges to learning multiple methods, such as tradeoffs in training and research, professional incentives that reward specialization, fragmentation in academia, and mistrust between disciplines (Poteete, Janssen, and Ostrom 2010).

An alternative that is gaining popularity is complementarity between multiple methods. Gruby and Basurto (2014), who share Johnson's (2004) pessimism regarding the potential for methodological convergence, argue that there is fertile ground for complementarity and collaboration between differing methodologies in the study of the commons; some notable examples include Gruby and Basurto (2014), Leslie et al. (2015), Jones (2015), and Basurto et al. (2016). Poteete and coauthors (2010) note that rapid theoretical development usually occurs when there is methodological and disciplinary cross-fertilization. Collaborating with anthropologists, historians, and critical scholars does require familiarity with new methods, their assumptions, and their limitations, and collaboration is time-consuming (Poteete, Janssen, and Ostrom 2010). The challenges of working across disciplines should not be underestimated (Campbell 2005) and a serious commitment of time and effort to collaboration may be the cost of having the tools to address the methodological critique.

Type 4: The Normative Critique

The normative critique argues that common-pool resource theory as practiced maintains particular norms at its core (e.g., sustainability is objectively good; management is good; collective action is good), and furthermore, by aiming to improve natural resource management within existing political-economic structures, can advance neoliberal, hegemonic, and coercive projects. This critique derives from philosophers like Michel Foucault (1982) who conceptualized "government" as the coercive regulation of people's behavior, and from political philosophers like James Scott (1985, 1998) who questioned the hegemony of norms, the agency of resistance, and the beneficiaries of collective action. The type 4 critique is mobilized by Agrawal (2003, 2005), Li (2006), and Mansfield (2004). Agrawal (2005) and Li (2006) primarily address the coercive aspect of this critique, while Mansfield (2004) addresses hegemony and neoliberalism in regards to common-pool resource theory.

In his analysis of decentralized forest management in Kumaon, India, Agrawal (2005) found that, despite ideals of rural empowerment, decentralization resulted in local form of "intimate government" where citizens legitimized, enforced, and believed in forest protection that they had previously resisted. Agrawal deliberately plays with the tension between scholars of resistance or subaltern studies (Scott 1985, Scott 1998) and scholars of hegemony (Moore Jr 1978, Foucault 1982), and extends both frames to explain forest management in Kumaon. Decentralization came about in Kumaon after command-and-control forest management was resisted with violent protests and fires in the early 1900s. By systematically documenting the steps that the government took to decentralize forest management, Agrawal identifies new "technologies of government" which the central government used to control citizens in the decentralized scheme. The most important was the creation of new ways for people to relate to their environment as "environmental subjects" responsible for its maintenance. The creation of environmental subjectivities generated the will to self-govern and act as protectors or caretakers of resources and the environment. Environmental subjects thus enact the government's project, seemingly of their own will (Agrawal 2005). These subjects did have agency in the choice to participate or not in forest management councils, which Agrawal links to believing in forest management and thus environmental subjecthood (Agrawal, Gupta et al. 2005). However, there is also coercion in the form of the 'technologies' that the government employs to decentralize (Agrawal 2005). Agrawal thus argues that decentralized systems can still operate as a coercive project of regulation if the true power – the power to decentralize and bestow power – lies with the government.

Agrawal (2005) mobilizes the normative critique by drawing attention away from sustainability, instead questioning why different people are concerned with sustainability (i.e., become subjects). Here, he responds to his own critique (Agrawal 2003) that commons scholars should use methods from the humanities to understand resistance and the creation of subjects, in the context of natural resource institutions. Building on Foucault's governmentality, Agrawal's work points to the possibility of coercion through natural resource decentralization. His arguments are not without critics. Some argue that if environmentality was so effective, governments everywhere would mimic Kumaon's forest management; others suggest that his study lacked adequate data, analysis, and literature (see responses to his article in *Current Anthropology*, (Agrawal, Gupta et al. 2005)). The importance of *Environmentality* to a type 4 critique, however, is in explicitly questioning underlying normative assumptions of commons theory, especially questioning whether village-level collective action for resource conservation actually reflects the interests of the resource users.

Li similarly expresses concern for such normative assumptions in *The Will to Improve* (Li 2007). In this book she examines a World Bank "Social Development" program in Kecamatan, Indonesia, that was declared a success, and then spread in franchise form to other countries by the World Bank (Li 2007). The program was premised on decentralization, community engagement, and participation; its main actions were to conduct a Participatory Rural Appraisal (PRA), formalize management groups, create social networks, foster social capital, and build capacity in local leadership. To make all this happen, the World Bank set up a competitive process whereby communities could compete for funds for community projects like bridges. They could win loans for these projects if they demonstrated a high number of groups, networks, social capital, and leadership capacity. The World Bank bypassed the existing government structures under the justification that these structures were rife with corruption. Instead, the Bank hired 4,200 consultants through the private sector (Li 2007). Drawing on Foucault, Li argues that the entire process was part of a hegemonic "project of government". She shows how an organization (like a state or the World Bank) may prefer decentralization to centralization for enacting its agenda. By operating through communities to support environmental subjects who govern themselves and their communities, the World Bank was able to use decentralization to enact its agenda. While Agrawal (2005) focuses on individuals and their agency to participate, Li studies how the system as a whole was coercive (Li 2007).

Li (2007) is particularly critical of the self-assessment of the project by ethnographers, which was conducted concurrently with plans for replication. Because the only politically viable conclusion of self-assessment was a confirmation of success, the ethnographic methodologies were used coercively. Thus, while the methodological critique of CPR suggests some possible resolution through engagement with methods like ethnography, the normative critique is trickier for commons scholars to navigate. The normative critique is pervasive, and is rooted in managing, improving, and governing others (Li 2007). Ethnographic, historical, and embedded methodologies are not exempt from being used to validate and impose further coercion.

Indeed, one characteristic of the normative critique is that it cannot be solved through technical fixes. Fabinyi and colleagues (2015) argue that common-pool resource theory renders political questions of land, resources, and jobs as technical problems that can be resolved by technical interventions. In their case, Fabinyi and coauthors found that resource users were more concerned with equality than with

the sustainability of the resource (Fabinyi, Foale, and Macintyre 2015). While commons theory does not dictate sustainability as the only outcome worth studying – indeed, Ostrom's Institutional Analysis and Design framework leaves the choice of outcomes to be studied open – Fabinyi and coauthors highlight the underlying normative decisions that must take place before a study is conducted as an explicit choice of the outcome to be considered.

Another normative critique of traditional commons literature is that it does not challenge a hegemonic neoliberal ideology, instead using neoliberal assumptions and serving a neoliberal agenda (Li 2006, Mansfield 2004). Mansfield (2004) assesses neoliberalism in the application of common-pool resource theory using fisheries in the North Pacific. She notes that traditional commons scholars often distinguish between their complex and nuanced view of property rights as compared to the simple and deterministic models of Hardin (1968) and Gordon (1954). However, Mansfield argues that they are still fundamentally neoliberal because they operate under the assumption that individual incentives and rational choice underlie relationships between people and property (Mansfield 2004). She argues that traditional commons scholarship only supports common property when property rights are able to take advantage of individual incentives to be sustainable (Mansfield 2004). Her critique points to the normative questions of what agenda is being served by commons scholarship.

Contemporary commons scholars have taken diverse responses to the normative critique. By deliberately questioning and being explicit about normative assumptions at the outset, scholars have moved away from the centrality of sustainability (Fabinyi, Evans et al. 2014, Fabinyi, Foale et al. 2015). Many contemporary commons scholars analyze the process of the shift towards sustainability, assessing the political and governance outcomes, rather than assume sustainability to be good (Patterson, Schulz et al. 2017). Some contemporary commons scholarship challenges neoliberal assumptions by using Judith Butler's idea of performance to argue that performing "commoning" is an anti-hegemonic form of resisting neoliberalism (García López, Velicu et al. 2017, Velicu and García-López 2018). Butler's performativity is usefully ambiguous between showing (e.g., performing a play) and doing (e.g., performing an action); performativity here is to be created and upheld by repetitive practices (Butler 1997, Butler 1999, Butler, Laclau et al. 2000). In the case of protecting forests from mining in Puerto Rico, performing community management was a way to resist enclosure and dispossession of common lands (García López, Velicu et al. 2017). Patrick Bresnihan has also drawn on performativity, writing how examples of commons management are anti-hegemonic and anti-neoliberal ways of practicing alternative economies to capitalism (Bresnihan 2016).

Conclusion

Our aim in constructing the typology is to organize a diverse and often overlapping set of concerns in a way that might make the basis of critiques more legible, and potentially actionable. We hope that this typology will contribute to the ongoing discussion about critical commons scholarship and topics like power (Bennett, Acton et al. 2018, Brisbois, Morris et al. 2019, Kashwan, MacLean et al. 2019). By organizing critiques by type rather than by topic, this typology can be used in the future as an analytical device with enough differentiation to assess how critiques of the commons have changed through time.

One frequent and cross-cutting aspect in all four types of critiques involves the application of common-pool resource theory into commons projects. These critiques identify problems with projects which apply (in some cases, coopt) for example principles of decentralization, co-management, and self-management. Sometimes it is the functional predictions that are critiqued for not working in practice (i.e., a type 1 critique; Campbell, Mandondo et al. 2001). Other times the lack of attention to power and politics (type 2) is critiqued in commons projects (Mosse 1997). In yet other cases it is the lack of appropriate methodologies for assessing a commons project (type 3; Mosse 1997) or the use of common-pool resource theory to justify coercive forms of decentralized, so-called "community based" projects (type 4; Li 2007). In many cases, these failed commons projects failed to attend to the nuanced, contextualized, and cautious conclusions of common-pool resource theory, especially in its contemporary form. However, the persistence of failed commons projects suggests that there is something in common-pool resource theory that makes it vulnerable for being coopted or misapplied.

Saunders (2014) synthesizes some characteristics of commons theory that lend its misapplication for (failed) commons projects. In a careful review comparing the "promise of common pool resource theory" and the "reality of commons projects", Saunders attributes the fault to key theoretical assumptions: individual rational resource users, a focus on efficiency and functionality, and simplifications that focus on incentives (Saunders 2014). Saunders argues that these assumptions do not map well on the messy, complex, multi-scalar systems where commons are managed and commons projects are enacted. Rather than dismissing

critiques of commons projects as not relevant critiques of commons theory, we agree with Saunders that in commons-related conservation and development, theory and practice are inexorably intertwined. The study of the commons and the resultant theory influences what development (and conservation) agencies do, not just what researchers study. Here, trying to respond to critique is about more than being academically accommodating or cordial; it is about improving outcomes for people and resources in the real world. We hope that this typology will assist commons scholars in grappling with critique, including critiques of commons projects.

On the other hand, in characterizing critiques of traditional commons scholarship, we think it is important not to lose sight of the practical and theoretical benefits of such a theoretical lens for studying common-pool resources (Ostrom 2002). Common-pool resource theory brings the focal lens to the individual, and takes seriously the struggle to achieve collective action. It draws on an array of social sciences – behavioral psychology, microeconomics, and political science – to understand a relatively narrow type of human organization around commonly held resources that has historically focused on institutions and property rights (Ostrom 1998). Furthermore, common-pool resource theory has found fertile ground not only within the field but beyond its boundaries. For example, Robbins describes common-pool resource theory as "one of the first and most essential contributions" to political ecology (Robbins 2011, p. 51), and Campbell (2007) notes that common-pool resource theory's systematic ways of characterizing institutions and property rights is theoretically useful for critical scholars from human geography, who often fail to distinguish between types of rights of local resource users (Campbell 2007). We end with a point by Bruno Latour, that critical scholarship itself should be viewed with a critical eye to what the critique actually accomplishes (Latour 2004).

Competing Interests

The authors have no competing interests to declare.

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