

# Reply: The Complexity of Commons

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## REPLY: THE COMPLEXITY OF COMMONS

*Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg*†

This Reply responds briefly to some of the challenges to and critiques of our article, *Constructing Commons in the Cultural Environment*, offered by Professors Thráinn Eggertsson,<sup>1</sup> Wendy Gordon,<sup>2</sup> Gregg Macey,<sup>3</sup> Robert Merges,<sup>4</sup> Elinor Ostrom,<sup>5</sup> and Lawrence Solum.<sup>6</sup> We are extremely grateful for the attention these scholars have devoted to our article and find the comments both constructive and complementary to our perspective in ways that substantially contribute to our project. We appreciate these extensions to our project and find that we agree with many of the commenters' suggestions, even if we cannot address all of them in this Reply. Instead, the Reply captures our responses to the most salient points among their comments. Some of those, as noted below, are reflected in modifications to the article itself. The full measure of others can be taken only in time as the research proposed in the article emerges through further commons case studies.

The Reply is organized thematically rather than as a response to each critique in turn. The Sections below address the following topics: First, what are commons? That is, what phenomena do we mean to capture for study? Second, what benefit do we derive from the multidisciplinary character of our framework for studying cultural commons—and at what cost? Third, what additional inquiries do these critiques suggest? Fourth and finally, what explicit and implicit normative assumptions do we make in offering this framework, and what questions about those assumptions do we defer?

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† At the outset, of course, we wish to thank each of these distinguished scholars for careful review of our article and critical engagement with our ideas and proposed framework.

<sup>1</sup> Thráinn Eggertsson, Response, *Mapping Social Technologies in the Cultural Commons*, 95 CORNELL L. REV. 711 (2010).

<sup>2</sup> Wendy J. Gordon, Response, *Discipline and Nourish: On Constructing Commons*, 95 CORNELL L. REV. 733 (2010).

<sup>3</sup> Gregg P. Macey, Response, *Cooperative Institutions in Cultural Commons*, 95 CORNELL L. REV. 757 (2010).

<sup>4</sup> Robert P. Merges, Response *Individual Creators in the Cultural Commons*, 95 CORNELL L. REV. 793 (2010).

<sup>5</sup> Elinor Ostrom, Response, *The Institutional Analysis and Development Framework and the Commons*, 95 CORNELL L. REV. 807 (2010).

<sup>6</sup> Lawrence B. Solum, Response, *Questioning Cultural Commons*, 95 CORNELL L. REV. 817 (2010).

I  
THE SCOPE OF COMMONS

We start with what appear to be definitional questions. Solum in particular challenges us to specify the criteria by which some phenomena are captured as “cultural commons” but others are not.<sup>7</sup> The “what is commons” question is understandable; our article is slightly vague, and deliberately so, regarding what precisely we mean by “cultural commons.” What is commons; what is culture; and what is cultural commons?

One reason that we hesitate to define the meaning of “commons” is that we do not intend to offer a theory or model that we claim is applicable to all commons. Following Ostrom, we characterize the approach of the main article as a framework,<sup>8</sup> and we have added some clarifications in the article to reflect that theme.

What we mean by a framework is that the article outlines a series of inquiries to pursue in analyzing phenomena that appear to operate as cultural commons. Those inquiries reflect a variety of theoretical dispositions and, in some cases, no theoretical disposition at all. We argue that it is neither possible nor appropriate to apply a theory to these phenomena until more data is available for analysis. As we discuss in the article, some commons phenomena appear to be better explained by club goods theory, others by transactions cost theory, others by game theory, and so on. No single theory appears to be capable of satisfactorily explaining the full range of commons phenomena.<sup>9</sup> The commons framework for collecting case studies is grounded on the premise that existing theories may prove to be inadequate. New theories may need to be developed. By encouraging the collection of studies under a kind of theoretical “big tent,” theorists of different persuasions can look at data grounded in a common framework and, in the best of worlds, inform one another’s work.

This explanation may satisfy the definitional critique only in part. Our project is admittedly grounded in the intuition that there are phenomena that operate as commons and merit study in the context of this framework, but there are other phenomena that do not. The term “commons” generally conjures up the notion of a shared community resource, such as a public park or a common pasture. Although the term is often used loosely to refer to the resources being

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<sup>7</sup> See *id.* at 828–32.

<sup>8</sup> See Ostrom, *supra* note 5, at 809–11; Elinor Ostrom & Charlotte Hess, *A Framework for Analyzing the Knowledge Commons*, in *UNDERSTANDING KNOWLEDGE AS A COMMONS: FROM THEORY TO PRACTICE* 41 (Charlotte Hess & Elinor Ostrom eds., 2007).

<sup>9</sup> See Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg, *Constructing Commons in the Cultural Environment*, 95 CORNELL L. REV. 657, 678 (2010) (explaining that club theory is useful in examining patent pools but not Wikipedia).

shared, to the community, or to the commons as a thing in itself, “commons” is best understood to refer to a type of resource-management strategy, generally reflected in institutions or a governance regime.<sup>10</sup> Firms, universities, families, government agencies, and even biker gangs practice commons-management strategies for sharing various resources,<sup>11</sup> but this fact does not mean that these organizations or communities *are* solely or essentially commons. Rather, they manage some resources as commons. We have at times used the term “commons” loosely ourselves, but we nonetheless believe firmly that it is important to distinguish among resources, resource-management strategies and institutions used to implement those strategies, and resource managers. Firms, families, universities, and the like are managers; they are not commons. In other words, we do not want to “thingify” commons. In our work on universities, for example, we argue that “the modern research university [is] a constructed cultural commons”—that is, that universities use commons resource-management strategies widely.<sup>12</sup> Indeed, it is obvious to any observer that many resources within universities are not managed as commons. Our focus is on cases of commons governance.<sup>13</sup>

The basic characteristic that distinguishes commons from noncommons is institutionalized sharing of resources among members of a community. “Cultural commons” is shorthand for situations in which the resources shared by members of a community are cultural resources. Our approach to studying commons in the cultural environment deliberately casts a wide net in terms of the types of cultural resources, sharing practices, and communities subject to consideration, and we hesitate to be too specific with respect to these criteria. Instead, we compose sets of questions to interrogate and explore them.

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<sup>10</sup> In law, even legally recognized “things” are not necessarily characterized by what philosophers might recognize as rigorous sets of features. See Michael J. Madison, *Law as Design: Objects, Concepts, and Digital Things*, 56 CASE W. RES. L. REV. 381 (2005). The title of Ostrom’s seminal work on commons reflects that her work focuses on governance. See ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* (1990). The citation in connection with her recent receipt of the 2009 Nobel Memorial Prize in Economic Sciences focuses on “her analysis of economic governance, especially the commons.” The Nobel Foundation, *The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2009*, [http://nobelprize.org/nobel\\_prizes/economics/laureates/2009/index.html](http://nobelprize.org/nobel_prizes/economics/laureates/2009/index.html) (last visited Mar. 9, 2010).

<sup>11</sup> We thank Christopher Buccafusco and Peter DiCola for asking us to explain whether biker gangs and firms are cultural commons.

<sup>12</sup> See generally Michael J. Madison, Brett M. Frischmann & Katherine J. Strandburg, *The University as Constructed Cultural Commons*, 30 WASH. U. J.L. & POL’Y 365, 378 (2009) (discussing the governance dimensions of the university as a constructed cultural commons).

<sup>13</sup> See *id.* at 378–80.

Treating commons as a governance strategy means that neither the subjects to be studied nor the results to be gathered will be precisely uniform. Although commons typically share certain governance features that have similar purposes, the details of those features and their functions will vary from setting to setting. Rather than debate definitions, we think it is most productive to ask whether analyzing various phenomena through the commons framework is useful. It would be counterproductive to foreclose study of a particular commons prospect because of an assumption, *a priori*, that certain things "are" or "are not" commons. Researchers who adopt the framework should be free to choose their own subjects and reach their own conclusions. Unexpected insights may result.

With respect to defining the resource units of commons analysis, a rigorous approach to comparative institutional questions might suggest that those units be specified (are these the relevant units?) and defined (what are their boundaries?) such that comparative analysis will be most useful.<sup>14</sup> In contrast, we believe that it is premature at this stage to lock in a one-size-fits-all description of cultural resources.

In part, we defer defining units of analysis too precisely for all purposes because different cultural commons contexts will process different species of knowledge and information: copyrights, patents, copyrightable expression, patentable inventions, data (or other information that is not governed by an intellectual property rights regime), and in some contexts, perhaps collections and combinations of these and other things. We offer the cultural commons framework to enable comparison of institutional arrangements that involve copyrights and those that involve patents, for example, whereas in other research, copyright-based institutions would be distinguished from patent-based institutions. In any given commons investigation, research should explore how knowledge and information units are defined and used by commons participants.

We also defer defining the resource set in detail for reasons related to differences between cultural commons and commons in tangible resources. In earlier commons analysis, not involving intellectual or knowledge resources, the scale of the unit as experienced in practice was closely aligned with the scale of the unit as analyzed by the law. In real-property contexts, the law and the marketplace deal in identically sized parcels of land. Firms, individuals, and governments can debate whether and how the boundaries of those parcels might be changed, voluntarily or involuntarily, but the borders of those parcels are largely given by history and practice, and

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<sup>14</sup> See Oliver E. Williamson, *Transaction Cost Economics and Organization Theory*, in ORGANIZATION THEORY: FROM CHESTER BARNARD TO THE PRESENT AND BEYOND 207, 225 (Oliver E. Williamson ed., 1995) (stressing the details of the unit of analysis).

validated by law. (That is not to say that in all contexts, borders and boundaries are always perfectly clear.) In the contexts of chattel property and tangibles, the same general scheme applies. In fisheries and forests, fish and trees as units of analysis are generally given by nature and recognized by law.

By contrast, intellectual or cultural resources do not necessarily come to us in “natural” sizes or scales. The definition of an intellectual resource, such as a copyrightable work of authorship, a patentable invention, a book, or a new machine, is clearly molded in part by market and historical considerations, but it is also driven to a significant degree by legal and other public-policy considerations,<sup>15</sup> and these two perspectives may or may not align with each other. Copyrights, for example, are the subjects of extensive transacting, but they have no well-defined *ex ante* scope; patents, which are not valid until a government agency has reviewed and approved a detailed set of legally enforceable “claims,” are subject to significant interpretation and limitation during licensing and litigation. There are intellectual resources that are too small,<sup>16</sup> or too numerous,<sup>17</sup> to be credible or useful in legal contexts. In addition, and perhaps most importantly, intangible resources can overlap, intertwine with one another, and change dynamically in ways that tangible resources typically cannot.

Intellectual property law generally distinguishes the intangible innovation or creativity that is protected by patent or copyright law from its material embodiment, which is not protected. A commons regime may apply at one of these levels but not the other. In some commons contexts, such as scientific research, it may be proper to characterize the relevant resources in terms of streams, continuity, or overlapping of intellectual resources, rather than to try to define discrete units. If discrete units are relevant to commons, then intellectual property transactions are likely to be important as topics for analysis. If information streams are relevant, then it is more likely that the absence of intellectual property rights, or structured limitations on intellectual property rights, will be important.

In sum, identifying intellectual resources and delineating their boundaries are, we suggest, parts of commons governance, rather than definitional processes that take place prior to the creation or

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<sup>15</sup> See, e.g., Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257, 272–75 (2007) (examining definitional and boundary-setting differences between real and intellectual property).

<sup>16</sup> See Justin Hughes, *Size Matters (or Should) in Copyright Law*, 75 FORDHAM L. REV. 575 (2005) (discussing why size of independent property claims matters in copyright and proposing suggestions for a workable minimum-size principle).

<sup>17</sup> See, e.g., Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 625 (1998) (describing how the creation of too many property rights can create anticommons blocking the effective use of a resource).

recognition of commons. Our framework incorporates identification and delineation of resources and their scales as questions to be asked, rather than as premises or assumptions.

## II DISCIPLINARY PERSPECTIVES

The proposed framework is not designed to reflect a single disciplinary foundation. Partly because we borrow from Ostrom's work and partly because of much of our own prior research, the framework relies explicitly on New Institutional Economics, rational choice theory, and transactions costs analysis (among other approaches within economics and law). But we recognize the limitations of each of those approaches, particularly with respect to understanding the dynamics of institutions built in part from intangibles. As Macey points out in his critique,<sup>18</sup> our research framework offers a compelling opportunity to blend the useful aspects of economic analysis with insights from other fields.

Our article suggests that research on commons should be broad and include inquiries into history and tradition, psychology, and sociology. Each of these disciplines sheds light on the sources and uses of intellectual and knowledge resources in commons contexts: where did those resources and associated institutions come from? How did they acquire whatever legitimacy and durability they have? Economic analysis alone may be insufficient for our purposes because it can be inattentive to the complexities of the real world.<sup>19</sup> Other social sciences offer perspectives, tools, and methods for exploring complementary questions associated with the practice of commons. Some scholars associated with New Institutional Economics have suggested that some or all of these perspectives may be validly incorporated into an overarching economics framework.<sup>20</sup> Eggertsson's comment likewise points in that direction.<sup>21</sup>

Our disciplinary eclecticism creates a tradeoff. On the one hand, were we to adopt a framework more directly tied to a single, focused theoretical perspective, commons research using that framework likely would generate a more integrated body of results with abundant

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<sup>18</sup> See Macey, *supra* note 3, at \*\*nn. 775–90.

<sup>19</sup> This brief summary is a point that many scholars have discussed elsewhere at length. The limits of economic models are apparent if one critically examines conventional economic assumptions about individual behavior and cognition; institutional history, dynamics and evolution; and the completeness and independence of markets, among other things. See, e.g., HERBERT A. SIMON, *Rational Choice and the Structure of the Environment*, in *MODELS OF MAN: SOCIAL AND RATIONAL* 261, 273 (1957).

<sup>20</sup> See, e.g., DOUGLASS C. NORTH, *UNDERSTANDING THE PROCESS OF ECONOMIC CHANGE* (2005).

<sup>21</sup> See Eggertsson, *supra* note 1, at 726–28, 731–32.

potential for comparative institutional analysis within that field. On the other hand, scholars in other fields largely would be foreclosed from researching commons on those terms, and their own commons research, whatever it might be, would not be organized in a way that would permit easy bridging among disciplines. The result would be two, or three, or more bodies of research that are not set up for comparative analysis, leading to the risk that the myopias inherent in certain disciplines would limit the reach of the investigation.

Our framework is designed for long-term interdisciplinary conversation, and we think that the likely downstream benefits of bringing a greater number of scholars into a single domain—the study of cultural commons—is worth the possible cost in disciplinary conformity.

That we have proposed a framework for the study of commons, rather than a theory or model, is an important, related point. In the article, we have clarified that at this point in our project, we do not argue that commons is a theory or a model of firm or individual behavior. We are not presently identifying predictions to be tested, as a theory of commons would warrant. We are not trying to fit historical data to a single standard, as would be expected if we were proposing a model. There will and should be time, in the future, for developing and testing theories and for proposing and refining models, and theories and models may emerge from commons data in a variety of disciplinary contexts. There is no reason for our project to generate data that can be used only by economists, or only by historians, or only by sociologists. Scholars in each of those disciplines, and in others, may develop models and theories based on the case studies and data generated by this framework. We emphasize that it is a framework precisely because its aim is to generate information that can be used later in more refined ways.

The framework is not and cannot be absolutely agnostic with respect to possible disciplinary applications. Even a framework has to start somewhere, and we acknowledge that we owe heavy debts to economics and rational choice theory. As our commenters encourage us to do, we recognize that economics and rational choice can take us, and future researchers, only so far. In the next Section of this Reply, we take up a handful of the more salient supplementary questions that our framework should address.

### III

#### SUPPLEMENTARY INQUIRIES

Almost all of the commenters suggest one or more specific additional themes, topics, or questions for research in future commons case studies. Some of these are additions to the commons framework

outlined in the article. Many fit within it. The key themes identified in the commentary are the following.

*Sources of commons.* The title of the article uses the phrase, “*constructing commons*.” What work does the term *constructing* do in that phrase, and what does it (or might it) mean? Gordon and Macey in particular point out that commons might exist and be sustained for reasons having little or nothing to do with intentional planning.<sup>22</sup> We agree.<sup>23</sup> Commons can be designed, but commons also happen. Cultural commons are the products of many different factors, some of them arising from deliberate choice, some unintentional or accidental, and some “emergent,” in the sense that the term “emergent” is associated with the science (and related social science) of complex systems. We describe these possibilities in the article, and the framework approaches them under the rubric of questions dealing with commons history, tradition, and narrative. But the comments are well taken, and we have clarified the article in some places to confirm our own intended meaning of “constructing” commons.

*The role of individuals.* In our article, we focus our framework almost entirely on the character and functions of institutions. Although we have built largely on Ostrom’s work, which comes out of the rational-choice tradition, we paid little explicit attention to what models of individual behavior might be implicit in our framework. Comments by Eggertsson and Macey, in particular, rightly highlight ways in which the interplay between individuals and institutions can play key roles in particular commons, and in that sense they confirm our argument that one should not rely only on Professor Ostrom’s Institutional Analysis and Development framework but also go beyond it.<sup>24</sup> Eggertsson highlights the importance of describing and analyzing individual cognitive capacity.<sup>25</sup> In a commons case, what is the evidence regarding how commons governance structures—rules, norms, and so on—are understood and applied by commons participants? Macey points out the possibility of suspending the rational choice assumption altogether.<sup>26</sup> That point is consistent with the possibility that commons may be emergent, rather than chosen. We agree on both counts. In using the commons framework, scholars should observe how people do (or did) behave and should develop models and theo-

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<sup>22</sup> See Gordon, *supra* note 2, at 735 & n.14; Macey, *supra* note 3, at 785–89.

<sup>23</sup> We intend the term *constructing* (and the related *constructed*) to differentiate cultural commons from natural resource commons in the sense of the former being a product of human activity (whether planned or not). Yet in either case, the resource-management regime—that is, commons—is a product of human activity. Thus, on reflection, it appears that we may have reinforced a tendency to conflate resources with management regime.

<sup>24</sup> See Eggertsson, *supra* note 1, at 719–23; Macey, *supra* note 3, at 760, 762–66.

<sup>25</sup> See Eggertsson, *supra* note 1, at 716–25.

<sup>26</sup> See Macey, *supra* note 3, at 763–67.

ries based on those observations. As with the point we made in the preceding Section, we do not propose to use the framework to impose a single theory of behavior on researchers. Do individuals in commons conform to expectations about rational behavior? Or do they not, and is there evidence that permits us to infer their reasons for not doing so? How much attention in a commons case study and, eventually, in theories and models about cultural commons, should be given to behavior, and how much to institutional design? Answers to those questions can be given only after more evidence and data has been collected.

*Types of knowledge resources.* As we note above, the framework emphasizes the fact that the nature of knowledge or intellectual resources must be investigated as part of a commons case rather than accepted as given. Eggertsson adds an important layer to this analysis that we do not emphasize in our article: the respective roles of tacit and codified knowledge.<sup>27</sup> Relatedly, Ostrom and Macey point out the important role of technology in structuring commons—a role that is worth more emphasis than we have given it.<sup>28</sup> “Tacit” knowledge refers to knowledge that is shared informally, without being recorded in a physical or digital medium. Tacit knowledge forms part of each individual’s cognitive apparatus for understanding and interacting with the world, at both conscious and subconscious levels. Tacit knowledge may arise from each individual’s general experience in the world. It may also arise in the context of discipline- or domain-specific learning. Codified knowledge is knowledge that is inscribed in some physical or digital form—that is, in some technology. A book is a type of codified knowledge; in the intellectual property context, a patent is a type of codified knowledge. Technology itself can function as codified knowledge. Both types of knowledge may be managed as commons. Our article emphasizes that intellectual or knowledge resources are nonrivalrous, and that characteristic distinguishes cultural commons from natural resource commons. The distinction between tacit knowledge, which is entirely intangible, and codified knowledge, which has both intangible and tangible dimensions, complicates this account somewhat. In the investigation of knowledge resources, it may be important to distinguish tacit from codified knowledge<sup>29</sup> and to identify and understand the legal rules, technologies, and other processes by which intangible forms of knowledge are distinguished from tangible forms.

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<sup>27</sup> See Eggertsson, *supra* note 1, at 719, 723–25, 730.

<sup>28</sup> See Macey, *supra* note 3, at 786–90; Ostrom, *supra* note 5, at 811, 813–14.

<sup>29</sup> See Dan L. Burk, *The Role of Patent Law in Knowledge Codification*, 23 BERKELEY TECH. L.J. 1009, 1012–19 (2008).

*The importance of discipline, including sanctions, and types of governance.* Gordon devotes much of her Response to a discussion of the importance of understanding sanctioning mechanisms in commons contexts.<sup>30</sup> In the course of arguing that commons research should pay close attention to the costs and benefits of different sanctioning mechanisms, she identifies what we think is a helpful distinction between “sap” problems (in which people invoke sanctioning mechanisms so they can avoid being taken advantage of) and “fondness” problems (in which people avoid invoking sanctioning mechanisms that would preclude allegiances with friends). The scope and operation of sanctions are part and parcel of our series of questions relating to relevant governance rules, and as Gordon notes, gaps in the application of sanctioning mechanisms, and unintended consequence of those mechanisms, can be particularly important.

Macey makes a related point about the importance of networks in commons analysis.<sup>31</sup> Our article highlights the possible role of nested commons institutions as forms of governance. Smaller commons may be nested within larger commons, and that matrix may itself serve as a form of governance. Network analysis adds a useful layer to that perspective, one that fits within the commons framework’s existing focus on relevant social structures. Commons may be nested not only within other, larger commons but also within preexisting legal, structural, and other institutional frameworks (such as intellectual property law, employment law, corporate law, law related to government funding of scientific research, history and tradition, and the like). As social structures, networks are institutions in that sense. They are institutions in their own right in which individual actors are situated, both inside and outside of commons. Networks may connect nested institutions and may impact information dissemination and the shapes of commons communities (these may be nested, or overlapping, for example).<sup>32</sup> Network analysis can also inform how we understand answers to the questions posed above concerning the role of individual intentionality as well as the scope and sources of individual preferences and choice.

#### IV

#### NORMATIVE PAYOFFS AND ASSUMPTIONS

Solum wonders about our normative commitments.<sup>33</sup> He challenges us to lay our normative cards on the table, if we have them.

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<sup>30</sup> See Gordon, *supra* note 2, at 736–49.

<sup>31</sup> See Macey, *supra* note 3, at 783–84, 788–90.

<sup>32</sup> See Katherine J. Strandburg et al., *Law and the Science of Networks: An Overview and an Application to the “Patent Explosion,”* 21 BERKELEY TECH. L.J. 1293 *passim* (2007).

<sup>33</sup> See Solum, *supra* note 6, at 830–34.

Alternatively, he invites us to be explicit that cultural commons research is largely a descriptive inquiry.

As an initial matter, Solum is correct in his suspicion that we are making what philosophers would call a “false necessity” argument. The standard models of innovation represented in the scholarly and policy literature wrongly exclude productive and sustainable models of innovation that are built on shared knowledge resources rather than on exclusivity. This argument is, as he notes, primarily descriptive, and at this stage of the research, it is driven more by intuition and anecdotal observation than by rigorous and comparative examination of data. The latter is exactly what the framework is designed to enable. When do commons work and how? As Macey notes, it is important to catalog not only the benefits of commons but also their costs.<sup>34</sup> Understanding commons may lead not just to understanding when and where they can be useful, but also to understanding when, how, and why to regulate them.

Nonetheless, we are motivated by an intuition that commons are normatively attractive in many situations, in the sense that they are superior, from a social standpoint, to innovation systems grounded solely in exclusive rights. One goal of the project is to conduct comparative commons study using some metric for social welfare, which might be specified by economic efficiency or other optimality conditions. Merges and Gordon offer suggestions for such a metric.<sup>35</sup> The framework is intended to be agnostic as to how one measures social benefit. Other metrics could be applied, depending on the models or theories that emerge from further study. Ostrom, for example, offers guidelines for the production of successful commons in the natural resources context.<sup>36</sup> Similar guidelines for successful commons in the cultural-resources context might be different; identifying such guidelines is a major purpose of studying further cases. Ostrom’s guidelines make clear that applying sustainability and stability as metrics, for example, rather than static efficiency, raise particularly tricky institutional questions. We might suppose (or conclude, after further cases) that the challenges of sustaining commons are of greater interest and importance than the challenges of building commons. Merges and Eggertsson each point in this direction, and we are open to that possibility.<sup>37</sup>

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<sup>34</sup> See Macey, *supra* note 3, at 761–62, 763–65.

<sup>35</sup> See Gordon, *supra* note 2, at 736–37; Merges, *supra* note 4, at 795–96.

<sup>36</sup> See Ostrom, *supra* note 5, at 811; Elinor Ostrom, *A Diagnostic Approach for Going Beyond Panaceas*, 104 PROC. NAT’L ACAD. SCI. U.S. 15181, 15183–85 (2007).

<sup>37</sup> See Eggertsson, *supra* note 1, at 713–14; Merges, *supra* note 4, at 793–94, 795–96, 802. Possible methods of building sustainability in cultural commons include building codified knowledge from tacit knowledge; training and education; and aggregating, generalizing, and sharing knowledge, especially basic research and knowledge. Each of these

Our normative position is modest. We are optimistic that down the road, commons case studies and refined models and theories will lead to public-policy payoffs in the intellectual property context and otherwise. We do not believe that it is necessary to commit to that proposition at this point.

#### CONCLUSION

This Reply has addressed some of the more salient questions and critiques raised in the six outstanding responses. We are grateful for the time and effort that the distinguished commentators have devoted to thinking about our article and for their suggestions and substantial contributions. We look forward to working with them and others in applying and refining the commons framework so that we can begin to understand how law and policy might best harness the creative potential of constructed cultural commons.

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things implies that historical analysis usually should be a key area of inquiry. *See, e.g.*, Robin Cowan et al., *The Explicit Economics of Knowledge Codification and Tacitness*, 9 *INDUS. CORP. CHANGE* 211 (2000).