THE NEGLECTED ROLE OF NON-PROFIT ORGANIZATIONS IN THE INTELLECTUAL-COMMONS ENVIRONMENT

A DISSERTATION
SUBMITTED TO THE STANFORD LAW SCHOOL
AND THE COMMITTEE ON GRADUATE STUDIES
OF STANFORD UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF THE SCIENCE OF LAW

Jyh-An Lee
May 2009
I certify that I have read this dissertation and that, in my opinion, it is fully adequate in scope and quality as a dissertation for the degree of Doctor of the Science of Law.

Professor Lawrence Lessig, Principal Adviser

I certify that I have read this dissertation and that, in my opinion, it is fully adequate in scope and quality as a dissertation for the degree of Doctor of the Science of Law.

Professor Michael Klausner

I certify that I have read this dissertation and that, in my opinion, it is fully adequate in scope and quality as a dissertation for the degree of Doctor of the Science of Law.

Professor Mark A. Lemley

Approved for the Stanford University Committee on Graduate Studies.

[Signature]
ABSTRACT

Intellectual commons are intellectual resources, which anyone can use either without permission, or with permission granted in advance. Since intellectual commons are crucially important to creativity, innovation, and human development, the shrinkage of the intellectual-commons environment will be a profound loss for our cultural freedom. Therefore, protecting intellectual commons has been one of the most important goals of recent innovation and information policies. Awareness of this importance has grown in large measure because of expanding intellectual property (IP) laws and the growth of digital technology that controls the flow of information. Scholars have urged society to reconstruct the public domain that protects the commons from enclosure, and public-interest advocates have also sought ways to expand access to various online intellectual resources. As a result, significant institutional efforts have emerged to preserve the intellectual-commons environment.

Institutions are among the structures through which a society seeks to deal with its various problems; therefore, it is important to understand the effectiveness of alternative forms of institutions, such as the government, for-profit businesses, and nonprofit organizations (NPOs). By the same token, in any discussion of preserving and strengthening the intellectual-commons environment, it is crucial for researchers to understand how different institutions affect this environment. Over the past twenty years, the creation of institutions and organizations, such as Creative Commons (CC), the Electronic Frontier Foundation (EFF), the Free Software Foundation (FSF), and Public Knowledge (PK) has laid essential building blocks for intellectual-commons as a social movement. Of importance to this Dissertation, these organizations are primarily NPOs.

This Dissertation focuses on the role of NPOs that occupy an increasingly critical and visible position in the intellectual-commons environment in recent years. By organizing effective institutional arrangements to enhance the production, access, use, search-ability, and preservation of diverse intellectual commons, various NPOs have emerged to perform public functions in public-goods provision, and, perhaps more importantly, their influence sometimes extends beyond the market firm and the state agency. These organizations have unique features enabling them to serve important social aims that neither the private sector nor the government can adequately fulfill. Nonetheless, scholars have tended to overlook the NPO as a topic worthy of theorizing and empirical investigation. Given the importance of NPOs in the intellectual-commons environment, it is surprising how little attention they have received in legal literature.

The aim of this Dissertation is to fill that gap. Through a detailed description of these NPOs and a series of in-depth, semi-structured interviews with twenty-three officials from nineteen NPOs and three executives in proprietary businesses, I argue that NPOs have provided the social structures that are necessary to support the production of intellectual commons, and yet differ from the structures supporting the production of proprietary information. Based on current commons and NPO
scholarship, I propose that the intellectual-commons environment has provided an “environmental niche” in which NPOs thrive. That is, the nature of NPOs is more consistent with commons-environment culture than that characteristic of for-profits or the government.

I aim to contribute to current scholarship in three aspects. First, I want to highlight the importance of the nonprofit sector in the digitally networked environment, which has been neglected by mainstream IP and Internet law scholarship. Second, researchers from diverse social sciences have adopted and adapted various NPO theories in a variety of philanthropic settings, such as health education, care, and performance arts. Nonetheless, no scholar has tested NPO theories in the intellectual-commons environment. Through applying these theories in a new territory, this study not only broadens the scope of NPO scholarship but also provide new implications for existing NPO theories. Third, by illustrating NPOs’ role in shaping the commons realm, this study provides a new lens through which to understand the intellectual-commons environment.
ACKNOWLEDGEMENTS

I am grateful to many people who helped me take this project from the idea stage to a dissertation. I am especially indebted to my advisor, Professor Larry Lessig. Without his great guidance, support and patience, I would not be able to finish this project. By his teaching, writing, enthusiasm, and action, Larry has taught me much more than what a student expects to learn. Having his advice has always made me feel that I am the luckiest student in the Law School. I also benefited from the insights of my two other committee members: Professors Mark Lemley and Mike Klausner. Their active questioning has led me to sharpen and improve my arguments. Mark kindly joined my committee in the first year of my doctoral studies and provided numerous important comments on several early drafts. By taking his classes, I benefited significantly from his encyclopedic knowledge of IP. As a student working on technology law issues, I had the privilege to be invited to Mark’s cozy house each of the past few years. Mike, on the other hand, helped me to reframe my understanding of nonprofit theories, which is pivotal to the project. As Larry told me, I was lucky to have Mike, “the Henry Hansmann at Stanford,” sit on my committee.

I would like to express my appreciation to Professor Deborah Hensler, who has endeavored to maintain a rigorous J.S.D. program and promote Stanford J.S.D.s’ excellence in research. Deborah taught me how to think as a social scientist and provided invaluable comments on methodology for this project. I am also grateful to her for creating a supporting community to do empirical research within the Law School. I received many helpful comments from other friends on earlier drafts as well. For their efforts, I wish to thank Margaret Chon, Joe Grundfest, F. Scott Kieff, Raymond S. R. Ku, Lili Levi, A. Mitchell Polinsky, and Lawrence Rosen.

I have also benefited greatly from the opportunity to present separate parts of this project in the “2008 IEEE International Professional Communication Conference on Opening the Information Economy” in Montreal, Canada, and the “2nd Annual Junior Scholars in IP Workshop” at Michigan State University College of Law in East Lansing, Michigan. I thank the Graduate Programs at Stanford Law and the Ministry of Education in Taiwan for financially supporting me in attending these two conferences and the participants there for their helpful comments.

I would like to thank each of my interviewees for their time and insight. I thank Elaine Adolfo and Lucy LaPier for providing invaluable administrative support. Thanks are also due to the staff of Robert Crown Law Library, especially Lois Drews, Kelly S. Kuehl, and George D. Wilson. I received financial support for this Dissertation from Taiwan Merit Scholarship TMS-092-2-A-013, the John M. Olin Program in Law and Economics, and the Graduate Program, and the International Graduate Programs at Stanford Law School, which I acknowledge with thanks. Another great debt is owed to Phil Hubbard and Carol Shabrami, who taught me how to write academic English and provided valuable feedback on earlier drafts.

I am deeply appreciative of the endless and unselfish support from my parents Yi-Yuan Lee, Li-Li Cheng, Chao-Jung Lin, and Lee-Chu Kuo. I am also grateful to my auntie Rebecca Rong-Rong Cheng, who took care of my kids and family, in the final stage of this project. The cheerful spirit of my daughter Elena and my son Lawrence has relieved pressures on many occasions. Finally, thanks as always to my wife Yu-Hsin Lin, who is my collaborator in all things and whose love and encouragement sustain me at all times. What’s noteworthy here is that Yu-Hsin is the person who introduced me to the rich nonprofit scholarship. Her unstinting support has made everything seem possible.
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The public domain should have its Greenpeace, its Environmental Defense Fund, its Nature Conservancy, its Environmentally Concerned Scientists.

James Boyle¹

A. The Emergence and Importance of NPOs in the Commons Discourse

Intellectual commons are intellectual resources that anyone can use without permission or with permission granted beforehand. Since they are crucially important to creativity, innovation, and human development, the shrinkage of the intellectual-commons environment will be a profound loss for our cultural freedom. Therefore, protecting intellectual commons has been one of the most important goals of recent innovation and information policies. Awareness of this importance has increased dramatically because of the expanding intellectual property (IP) laws and the digital technologies that control the flow of information. Scholars have urged society to reconstruct the public domain that protects the commons from enclosure, and public-domain issues. 

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3 See e.g. Boyle, Second Enclosure Movement, supra note 1, at 40; Lawrence Lessig, Code and Other Laws of Cyberspace: Version 2.0 198-99 (2006) [hereinafter Lessig, Code 2.0]. See also Lawrence Lessig, Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity (2004) (explaining the importance of freedom provided by commons in creative activities) [hereinafter Lessig, Free Culture]; Lessig, Code 2.0, at 377-79 (providing abundant literature on the value of intellectual commons in IP systems); Jessica Litman, The Public Domain, 39 Emory L.J. 965, 1023 (1990) (arguing that intellectual commons in the public domain is critically important for the operation of a copyright system based on the system’s institutional assumptions) [hereinafter Litman, Public Domain].

4 See infra note 79-91 accompanying text.

interest advocates have also sought ways to expand access to various online intellectual resources. As a result, significant institutional efforts have emerged to preserve the intellectual-commons environment.

Institutions are among the structures through which a society seeks to deal with its various problems; therefore, it is important to understand the effectiveness of alternative forms of institutions, such as the government, for-profit businesses, and nonprofit organizations (NPOs). By the same token, in any discussion of preserving and strengthening the intellectual-commons environment, it is crucial for researchers to understand how different institutions affect this environment. Over the past twenty years, the creation of institutions and organizations, such as Creative Commons (CC) Electronic Frontier Foundation (EFF), Free Software Foundation (FSF), and Public Knowledge (PK), has laid essential building blocks for intellectual commons as a social movement. Significantly, these organizations are primarily nonprofit organizations (NPOs).

This Dissertation focuses on the NPOs that occupy an increasingly critical and visible position in the intellectual-commons environment in recent years. Through a detailed description of these NPOs, I argue that such organizations have provided the social structures that are necessary to support the production of intellectual commons.

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6 See infra Chapter 4 Section B.2.

7 James Boyle, Cultural Environmentalism and Beyond, 70 Law & Contemp. Probs. 5, 9 (Spring 2007) [hereinafter Boyle, Cultural Environmentalism].

8 See Benkler, Wealth of Networks, supra note 2, at 26 (stating that institutional forms may influence human beings’ interaction with information production and consumption).

9 Boyle, Cultural Environmentalism, supra note 7, at 14-17; Boyle, Public Domain, supra note 2, at 243-44.
and yet differ from the structures supporting the production of proprietary information. By organizing effective institutional arrangements to enhance the production, accessibility, use, searchability, and preservation of diverse intellectual commons, various NPOs have emerged to perform public functions in public-goods provision, and, perhaps more importantly, NPOs’ influence sometimes extends beyond the market firm and the state agency. I propose that the intellectual-commons environment has provided an “environmental niche” in which NPOs thrive. That is, the nature of NPOs is more attuned to commons-environment culture than is the nature of for-profits or of government.

Although NPOs have a unique value for commons production, this Dissertation does not suggest that they can or will completely supplant the government and for-profits in the commons environment. Neither does this Dissertation suggest that NPOs are adversaries of the market or the state. In fact, the characteristics of these three sectors interpenetrate one another and perform complementary tasks. Their complementary coexistence and relative salience as organizational forms for various social activities determine the allocation of resources in our society.

B. Research Questions and Intended Contribution

NPOs studied in this Dissertation have unique features enabling them to serve important social aims that neither the proprietary sector nor the government may fulfill very well. Nonetheless, scholars have tended to overlook the NPO as a topic worthy of theoretical or empirical investigation. Given the importance of NPOs in the intellectual-commons environment, it is surprising how little attention they have received in the legal literature.
The aim of this Dissertation is to fill that gap. Therefore, the primary research question herein is,

*How have NPOs crafted the intellectual-commons environment in the digital world?*

In order to answer this question and address relevant theoretical ponders, this study specifically considers the following subsidiary questions:

*What are NPOs in the commons environment?*

*Why do NPOs matter in the commons environment?*

*Can current NPO theories explain this phenomenon?*

*Why is the commons environment an ideal milieu for the flourishing of NPOs?*

By answering the above primary and subsidiary research questions, I aim to contribute to current scholarship in three ways. First, I highlight the importance of the nonprofit sectors in the digitally networked environment, a topic that has been neglected by mainstream IP and Internet law scholarship. Second, scholars from diverse social sciences have adopted various NPO theories and adapted them to a variety of philanthropic settings, such as education, healthcare, culture and arts, and securities class actions. However, no scholar has tested NPO theories in the intellectual-commons environment. By applying these theories to a new territory, this

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study not only broadens the scope of NPO scholarship but also reveals new implications for existing NPO theories. Third, although the importance and development of the commons have drawn extensive attention from academia in recent years, scholars have yet to address the crucial role of formal organizations.\textsuperscript{14} By illustrating the role of NPOs in shaping the commons environment, this study provides a new lens through which we can better understand the intellectual-commons environment.

\textbf{C. Methodology}

Based on a series of in-depth interviews with primarily various officers from NPOs, this Dissertation merges two theoretical frameworks, namely commons theories and NPO theories, by analyzing the role of NPOs in the commons environment in a way that is both theoretically informed and empirically grounded.

\textbf{1. Theoretical Framework}

This research is grounded in two primary theoretical frameworks. The first is commons theories, especially those associated with intellectual commons, and the second is NPO theories.

\textbf{a. Commons Theories}

Commons theories originate from Garrett Hardin’s famous essay “The Tragedy of the Commons,” which describes how scarce resources open to everyone would be depleted. Hardin’s pessimistic outlook on individuals’ ability to collaborate echoes

\textsuperscript{14} Some literature does focus on informal organizations (such as communities) and on informal institutions (such as social norms).
economist Mancur Olson’s argument that “rational, self-interested individuals will not act to achieve their common or group interest.”

Nonetheless, not all scholars regard the barriers to collective solutions as insurmountable. Political scientist Elinor Ostrom has conducted an in-depth analysis of several long-standing and viable common-property regimes, including Swiss grazing pastures, Japanese forests, and irrigation systems in Spain and the Philippines. She argues that any group attempting to manage a common resource (e.g., aquifers, judicial systems, pastures) for optimal sustainable production must solve a set of problems in order to create institutions for collective action, and there is some evidence that following a small set of design principles in creating these institutions can overcome these problems. In contrast with a commons, where many individuals have privileges of use regarding a certain resource, the “tragedy of the anticommons” happens when a plurality of individuals have rights of exclusion over a resource and when the transaction costs of coordinating those rights overwhelm any previously existing benefit.15

On the basis of the commons studies, scholars in various fields have produced extensive research literature focusing on disparate aspects of the intellectual-commons environment, such as commons as a social movement, the nature of commons production, and the characteristics of commons communities. By viewing information as a commons, some researchers have acquired a keen insight into both its possibilities and what threatens it.

15 See e.g. MICHAEL HELLER, GRIDLOCK ECONOMY: HOW TOO MUCH OWNERSHIP WRECKS MARKETS, STOPS INNOVATION, AND COSTS LIVES 1-2 (2008) [hereinafter HELLER, GRIDLOCK ECONOMY].
A significant part of this Dissertation rests on the commons scholarship mentioned above. Both the collective-action problem in the traditional commons scenario and the tragedy of the anticommons are mirrored in the intellectual-commons environment. Moreover, the norms and nonproprietary nature of the commons communities and commons licensing arrangements provide a solid theoretical basis for the analysis of relevant commons institutions. Lastly, the nonproprietary and community attributes of the commons have created unique links to the nonprofit organizational form.

b. NPO Theories

NPO scholars occasionally state that NPOs are supplying a particular good or service. They explore why NPOs exist and how their behavior would differ from for-profits’ behavior. The non-distribution constraint is an essential part of most NPO theories. The constraint provides clear distinctions regarding who controls NPOs, how NPOs obtain resources, how NPOs behave in the marketplace, and how donors and clients perceive the marketplace.

The Dissertation is rooted in two dominant NPO theories—contract failure theory and government and market failure theory. Contract failure arises when trustworthy information about the quality and quantity of a delivered service cannot be purchased. Drawing on contract failure theory, I argue that NPO-derived trust plays a decisive role in commons governance. On the other hand, government and market failure theory defines a potential role for NPOs when governments and for-profits fail to provide certain public goods. This theory provides me with a powerful lens for

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analyzing various NPO activities in contexts where the government and the market fail to provide the right mixture of public goods for commons development. By examining the robustness of two NPO theories and by touching on related ones, this Dissertation illustrates NPOs’ active role in the commons context.

2. Empirical Data

The essential data in this research derive from four sources. The first three are publicly available. First, I have reviewed the existing literature with a focus on the commons environment or on specific NPOs. Second, I have read a broad range of news articles related to NPOs in the commons environment. Third, I have browsed the information provided on these NPOs’ websites. The most important source of information, however, has been a series of in-depth, semi-structured interviews that I conducted, from June 2007 to July 2008, with twenty-three officials from nineteen NPOs and with three executives from three proprietary businesses.

Of the twenty-six interviews mentioned above, seventeen were conducted via telephone, whereas nine were face-to-face interviews. Each interview lasted a minimum of thirty minutes and some continued for more than one and a half hours. The interview questions were designed to capture information pertaining to the research questions identified above. I should emphasize that it was not my goal to impose on the interviews an artificial structure (regarding the issues covered or the sequence of the issues), nor did I place any artificial time constraints on the interviews. At the beginning of each interview, I sought permission to digitally record the interview and to disclose the identity of the interviewee in the Dissertation. I assured each interviewee that she or he need not consent to the recording or the
disclosure of identities, and in this way, I ensured strict confidentiality. Nonetheless, all interviewees permitted both my recording and my disclosure of identities in this project. Therefore, all interview results were recorded and transcribed.

I used two methods to select the organizations represented by participants. First, I mapped out the NPOs involved in the commons movement via the public goods they produced. These public goods include social norms and licensing terms, organizational support for peer-production projects, legal support, political advocacy, information access and repositories, and public-interest grant-making. Officers in all these NPOs were identified as potential interviewees. Second, I used a “snowball” method of sampling, in which I asked each of the persons whom I interviewed to identify other relevant NPOs and persons who had significant information regarding my project. Interestingly, the NPOs identified by means of each of these two methods were often the same.

Certainly, it is possible that bias still exists in the data owing to my selection of NPOs for interviews. To address this limitation, I have included as many important NPOs as possible in the interview process. I am confident that the sampling selection covered most of the benchmark NPOs in the commons discourse. Furthermore, I carefully tried to avoid such problems in conducting the research. For the very few NPOs whose executives I did not interview, I was careful in reading and using relevant public information. In the meantime, I sought to compensate for this limitation by interviewing officers from other NPOs that provided similar public goods.
CHAPTER 2 COMMONS, INTELLECTUAL COMMONS, AND THEIR TRAGEDIES

Public goods are defined in terms of two properties: non-rivalrousness in consumption and non-excludability. Non-rivalry means that one’s consumption of a public good does not reduce the amount available to others. The marginal cost of an additional consumption of such a good is zero. Non-excludability, on the other hand, means that no particular group of people can be excluded from using the goods.

Pure public goods possess the above two properties—non-rivalry in consumption and non-excludability—absolutely. Pure public goods are perfectly non-rivalrous in consumption, and the cost of excluding another individual from consuming them is prohibitively high. National defense, the sunset, and common knowledge are all cases of pure public goods. However, most public goods are not pure public goods in this sense, because they have one or the other characteristic only to a certain extent.

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17 See e.g. Robert Cooter & Thomas Ulen, Law & Economics 42 (3rd ed. 2000); Joseph E. Stiglitz, Economics of the Public Sector 80, 128 (3rd ed. 1999) [hereinafter Stiglitz, Public Sector].
18 BENKLER, WEALTH OF NETWORKS, supra note 2, at 35-36; STIGLITZ, PUBLIC SECTOR, supra note 17, at 80, 128. Nonrivalry in consumption is used by Cornes and Sandler interchangeably with indivisibility of benefits. See RICHARD CORNES & TODD SANDLER, THE THEORY OF EXTERNALITIES, PUBLIC GOODS, AND CLUB GOODS 3 (1986).
19 STIGLITZ, PUBLIC SECTOR, supra note 17, at 132.
20 Id. at 80, 128.
21 Mark Cooper, From WiFis to Wikis and Open Source: The Political Economy of Collaborative Production in the Digital Information Age, J. ON TELECOMM. & HIGH TECH. L. 125, 130 (2006) [hereinafter Cooper, From WiFis to Wikis and Open Source]; STIGLITZ, PUBLIC SECTOR, supra note 17, at 132.
23 STIGLITZ, PUBLIC SECTOR, supra note 17, at 132.
A. Commons Traditionally Defined

1. Commons and the Tragedy of the Commons

The idea of *commons* has been articulated by a number of scholars in different fields. Traditionally, commons refers to *common-pool resources* (CPRs), which are “natural or man-made resources [for which] exclusion is difficult, and yield is subtractable.” In other words, commons is a shared impure public good because it is non-excludable, but rivalrous in consumption. Examples of CPRs range from “inshore fisheries, irrigation systems, and pastures to the vast domains of the oceans and biosphere.”

One’s use of a part of a CPR subtracts that part from other people’s use and enjoyment of the CPR. Therefore, a CPR may be overused by multiple entities that are allowed to use it jointly. This is known as the *tragedy of the commons*.

Classic examples of this tragedy include over-fished oceans and overgrazed fields.

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24 See e.g. Elinor Ostrom & Roy Gardner, Coping with Asymmetries in the Commons: Self-Governing Irrigation Systems Can Work, 7 J. ECON. PERSP. 93, 93 (1993). See also Cooper, From WiFi to Wikis and Open Source, supra note 21, at 131 (noting that CPRs are nonexcludable but rivalrous); Elinor Ostrom et al., *Rules, Games, & Common-Pool Resources* 4 (1994) (defining CPRs as resources “where excluding potential appropriators or limiting appropriation rights of existing users is nontrivial…and the yield of the resource system is subtractable”); some scholars use “common-property resources” to express the same concept. See e.g. David Feeny et al., Questioning the Assumptions of the “Tragedy of the Commons” Model of Fisheries, 72 LAND ECON. 187, 187 (1996). See also H. Scott Gordon, The Economic Theory of a Common-Property Resource: The Fishery, 62 J. POL. ECON. 124, 124 (1954) (noting that natural resources have a common-property nature). However, in this Dissertation, I avoid such expressions in order to avoid confusion over the “common-property regime” introduced below.


26 See Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243 (1968) (arguing that individuals who jointly use a commons fall helplessly into an immutable tragedy. Hardin asserts that it is government intervention or private ownership, rather than technology, that can solve such problems). See also Todd Sandler, *Collective Action: Theory and Applications* 117-23 (1992) (using static economic analysis to illustrate the commons overexploitation problem) [hereinafter Sandler, *Collective Action*].

2. Open-access Regime and Common-property Regime

CPRs may be subject to different property regimes that regulate access to resources. The open-access regime and the common-property regime (or communal-property regime) are, among others, the most prevalent regimes regulating CPRs.28 The open-access regime entails characterizing commons as a resource that no one person or entity has the legal right to exclude others from using,29 whereas the common-property regime means that only members of a clearly defined group have a bundle of related legal rights, including the right to exclude nonmembers from using a common resource.30

Many theorists perceive the concept of the commons via only one of these two regimes. For some scholars, the commons denotes resources indiscriminately available to the public.31 Many other scholars, however, tend to use commons to denote resources controlled only by a clearly defined group or by limited members;32 some of these scholars use the terms commons and common property interchangeably in their

28 See Arun Agrawal, Common Property Institutions and Sustainable Governance of Resources, 29 WORLD DEV. 1649, 1652-53 (2001); Daniel W. Bromley, The Commons, Property, and Common-Property Regimes, in MAKING THE COMMONS WORK: THEORY, PRACTICE, AND POLICY 3, 3-4 (Daniel W. Bromley et al. eds., 1992); Feeny et al., supra note 24, at 188.
29 BOLLIER, SILENT THEFT, supra note 5, at 20; HELLER, GRIDLOCK ECONOMY, supra note 15, at 34.
30 Feeny et al., supra note 24, at 188.
31 For example, the influential article The Tragedy of the Commons, written by Garrett Hardin, focuses on commons under an open-access regime. See Hardin, supra note 26, at 1244-45 (using the example of a pasture “open to all”). See also Yochai Benkler, Coase’s Penguin, or Linux and the Nature of the Firm, 112 YALE L.J. 369, 436 (2002) (arguing that the term “commons” denotes a resource that is available for everyone’s use) [hereinafter, Benkler, Coase’s Penguin].
32 See e.g. Hanoch Dagan & Michael Heller, The Liberal Commons, 110 YALE L.J. 549, 557 (2001) (suggesting that commons denotes resources “owned or controlled by a finite number of people who manage the resource together and exclude outsiders;” SANDLER, COLLECTIVE ACTION, supra note 26, at 117 (defining commons as “a scarce resource that is owned collectively by a set of agents”).
In order to avoid confusion, I use the term CPR, rather than the term common property, to represent the traditional definition of the term commons.

B. Intellectual Commons and the Tragedy of the Anticommons

In this section, I will clarify some conceptions associated with intellectual commons. The very nature of intellectual commons differs significantly from that of CPRs. Consequently, the problems resulting from managing these two types of resources also differ from one another despite the fact that the rich literature on CPRs has provided substantial groundwork for intellectual commons research. This section will also differentiate the concepts of intellectual commons and the public domain, although in IP scholarship, they sometimes overlap conceptually.

33 See e.g. Paul Seabright, Managing Local Commons: Theoretical Issues in Incentive Design, 7 J. ECON. PERSP. 113, 113 (1993) (treating commons as “common property resources” in which “property rights are exercised (at least partly) collectively by members of a group”).
34 See supra text accompanying note 24-25.
35 See e.g. James Boyle, Forward: The Opposite of Property?, 66 LAW & CONTEMP. PROBS. 1, Winter/Spring 2003, at 1, 6 (arguing that the commons literature provides IP and information economics scholars with a new approach to understand the debates over IP policies); Boyle, Second Enclosure, supra note 1, at 65-66 (citing Elinor Ostrom and other scholars’ work to explain that commons is not always free and that the tragedy of the commons does not always result); Lessig, Re-crafting a Public Domain, supra note 5, at 75 (recognizing the value and limits in applying CPR studies to intangible resources); James Boyle, Mertonianism Unbound? Imaging Free, Decentralized Access to Most Cultural and Scientific Material, in UNDERSTANDING KNOWLEDGE AS A COMMONS: FROM THEORY TO PRACTICE 123, 123-24, 129-30, 138-39 (Charlotte Hess et al. ed., 2007) [hereinafter Boyle, Mertonianism Unbound] (implicating commons literature to the discussion of IP issues); Elinor Ostrom & Charlotte Hess, A Framework for Analyzing the Knowledge Commons, in UNDERSTANDING KNOWLEDGE AS A COMMONS: FROM THEORY TO PRACTICE 3, 4 (Charlotte Hess et al. ed., 2007) (noting that the study of information as a commons originates from the interdisciplinary study of CRPs, such as forest and wildlife and that “[a]n increasing number of scholars found that the concept of the ‘commons’ help them to conceptualize new dilemmas they were observing with the rise of distributed, digital information.”)
1. The Concept of Intellectual Commons

The Internet and digital technologies that allow for inexpensive, wide distribution of information have dramatically changed the way intellectual resources—such as arts, literature, research, pictures, film, music, and software code—can be shared. Such shared intellectual resources are similar to, but also different from, traditional CPRs. As a result, within the intellectual arena, commons has taken on a new meaning. To many legal scholars who study IP and information technology, commons has a slightly different meaning from that typically used by other social scientists. They somehow ignore the rivalrous attribute of CPRs and put more emphasis on the non-excludability of a resource. To these scholars, a commons is a shared resource that is not under private control and that anyone can use without permission. Expressed differently, the essential nature of commons is the opposite of the essential nature of property in

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36 See e.g. BOLLIER, SILENT THEFT, supra note 5, at 100-101 (noting that the Internet has enabled wide exchange of information); Ostrom & Hess, Knowledge Commons, supra note 35, at 46-47 (arguing that most intellectual commons have “developed from the effects of new technologies” and that “[m]any digital facilities today make it possible for...information to be nonrivalrous.”)

37 For example, Professor Yochai Benkler notes, “The salient characteristic of commons, as opposed to property, is that no single person has exclusive control over the use and disposition of any particular resource in the commons.” BENKLER, WEALTH OF NETWORKS, supra note 2, at 61. He defines commons as resources which are “unowned and free for all to use in pursuit of their productive enterprise.” Yochai Benkler, Freedom in the Commons: Towards a Political Economy of Information, 52 DUKE L.J. 1245, 1273 (2003) [hereinafter Benkler, Freedom in the Commons]. John Cahir defines commons as “a situation where no individual or entity is recognized under law as having the right to exclude others from access to or use of a resource.” John Cahir, The Withering Away of Property: The Rise of the Internet Information Commons, 24 OXFORD J. LEGAL STUD. 619, 634 (2004). Professor Brett M. Frischmann equates commons with open access, which means resources that are “openly accessible to all within a community regardless of the entity’s identity or intended use.” Brett M. Frischmann, An Economic Theory of Infrastructure and Commons Management, 89 MINN. L. REV. 917, 921 (2005) [hereinafter Frischmann, Commons Management]. Professor Lawrence Lessig indicates that a commons is “a resource that is free.” By being free, Lessig means “[n]ot necessarily zero cost, but if there is a cost, it is a neutrally imposed, or equally imposed cost.” See Lawrence Lessig, The Architecture of Innovation, 51 DUKE L. J. 1783, 1788 (2002) [hereinafter, Lessig, Architecture of Innovation]. Lessig further states the commons is a resource that is not subject to permission of anyone. LESSIG, CODE 2.0, supra note 3, at 198.
terms of exclusiveness. 38 IP scholarship indicates that commons is not subject to exclusive private control, 39 whereas exclusivity is one of the most important characteristics of property. 40 Although some of these scholars mention that commons is a resource to members within a relevant community, 41 their definition and application of commons is closer to the open-access regime mentioned previously, which is only one of the property regimes that regulate CPRs. 42

In this Dissertation, I treat the term commons or intellectual commons according to IP scholars’ previously mentioned definitions of the term commons. Therefore, commons, as opposed to the proprietary aspect of IP, refers to intellectual resources, including culture, knowledge, and information, which are openly accessible and not


39 BENKLER, WEALTH OF NETWORKS, supra note 2, at 60-61.


41 Frischmann, Commons Management, supra note 37, at 921; LESSIG, FUTURE OF IDEAS, supra note 2, at 19-20; LESSIG, CODE 2.0, supra note 3, at 198.

42 Professor Lawrence Lessig is actually aware that his use of the “commons” terminology “is not technically accurate.” Nonetheless, he believes “the spirit of the metaphor is correct.” Lawrence Lessig, The Limits in Open Code: Regulatory Standards and the Future of the Net, 14 BERKELEY TECH. L.J. 759, 764 (1999) [hereinafter Lessig, Limits in Open Code]. Professor Boyle is also aware of the fact that traditional commons is within certain groups, but he believes that in the IP context, “it is a commons only if the whole society has access.” BOYLE, PUBLIC DOMAIN, supra note 2, at 39. See also HELLER, GRIDLOCK ECONOMY, supra note 15, at 34 (“Mistakenly, the legal and economics literatures have long conflated the commons with open access.”)
under private control. By contrast, one can prevent the transformation of one’s intellectual resource into a commons by keeping it secret or by appropriating IP rights over it. In other words, proprietary IP is in “the realm of individual control,” whereas intellectual commons is in “the realm of distributed creativity, management, and enterprise.”

In IP scholarship, the term *commons* and the term *public domain* are sometimes used interchangeably, because both terms somehow represent “property’s outside” or “property’s antonym.” Professor Jessica Litman defines *public domain* as “a commons that includes those aspects of copyrighted works which copyright does not protect.” However, commons is not necessarily in the “traditional” public domain, although intellectual resources in the public domain all seem to be commons. There are some commons still under IP protection. However, they become commons because their owners indiscriminately allow certain forms of public use. For this reason, Professor James Boyle distinguishes between the commons and the public

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43 See Boyle, Second Enclosure Movement, supra note 1, at 62 (noting that intellectual commons denotes “wellsprings of creation that are outside of, or different from, the world of intellectual property”). I do not use the term information commons or the term digital commons to represent such resources because these terms sometimes include non-intellectual resources. See e.g. Stephen J. Lukasik, Protecting the Global Information Commons, 24 TELECOMM. POL’Y 519 (2000) (using “information commons” to stand for the Internet itself); Dan Hunter, Cyberspace as Place and the Tragedy of the Digital Anticommons, 91 CAL. L. REV. 439, 503-04 (2003) (using the term digital commons to signify both intellectual resources and non-intellectual resources). Other similar expressions of this concept include electronic commons, virtual commons, communication commons, Internet commons, and technological commons. See Hess & Ostrom, supra note 35, at 4.

44 See Boyle, Second Enclosure Movement, supra note 1, at 66.

45 See e.g. BOLLIER, SILENT THEFT, supra note 5, at 119; Hess & Ostrom, supra note 22, at 114-15.

46 See Boyle, Second Enclosure Movement, supra note 1, at 66.

47 Litman, Public Domain, supra note 3, at 968. See also Boyle, PUBLIC DOMAIN, supra note 2, at 38 (“The public domain is material that is not covered by intellectual property rights).


49 Cahir, supra note 37; at 639; Lessig, Re-crafting a Public Domain, supra note 5, at 74-75.

50 This is why Lessig points out that the control of commons differs from the control of property. See Lessig, Architecture of Innovation, supra note 37, at 1788. Professor Greg Lastowka refers to this type of commons as “open copyright.” Greg Lastowka, Digital Attribution: Copyright and the Right to Credit, 87 B.U. L. REV. 41, 43, 47-49 (2007) [hereinafter Lastowka, Digital Attribution].
domain, noting that the former includes rules, norms, and other restraints that are absent in the latter.\textsuperscript{51} Nonetheless, since the commons protected by IP, just like the public domain, functions as a free space for creative activities, Professor Lessig refers to it as an “effective public domain.”\textsuperscript{52}

Free/open source software (F/OSS)\textsuperscript{53} is a typical example of commons.\textsuperscript{54} F/OSS is software whose source and object code are distributed and made available to the public, a step that allows for use and modification by anyone,\textsuperscript{55} but subject to certain restrictions.\textsuperscript{56} F/OSS, which is licensed as commons by its developers, is not in the

\begin{itemize}
\item \textsuperscript{51} Boyle, \textit{Mertonianism Unbound}, supra note 35, at 138; see also Boyle, \textit{Cultural Environmentalism}, supra note 7, at 9 note 12 (describing commons as “a zone of freedom” created through IP rights and licenses).
\item \textsuperscript{52} Lessig, \textit{Re-Crafting a Public Domain}, supra note 5, at 56, 64.
\item \textsuperscript{53} I am well aware of the distinctions between “free” and “open source” software, but will treat them as being the same for the purpose of this Dissertation.
\item \textsuperscript{55} Although the Free Software Foundation and the Open Source Initiative, two important NPOs in the F/OSS world, have different views about the definition of free software or open source software, they both agree that the key concept is free access, free distribution, and free modification in relation to the source code. See Lawrence Rosen, \textit{Open Source Licensing: Software Freedom and Intellectual Property Law} 1-8 (2005) [hereinafter Rosen, Open Source Licensing]. In contrast, most commercial software is proprietary software and is distributed only with the object code so that competitors are prevented from reusing the source code to develop the software. See Christian H. Nadan, \textit{Open Source Licensing: Virus or Virtue?}, 10 TEX. INTELL. PROP. L.J. 349, 351 (2002).
\item \textsuperscript{56} See e.g. Boyle, PUBLIC DOMAIN, supra note 2, at 39; Cass Sunstein, \textit{Infotopia: How Many Minds Produce Knowledge} 166 (2006) [hereinafter Sunstein, Infotopia]; Samuelson, supra note 54, at 800.
\end{itemize}
public domain; it is still subject to copyright protection.\textsuperscript{57} F/OSS is distributed under a license that requires source code authors, distributors, and users to comply with certain conditions.\textsuperscript{58} Similarly, the content of Wikipedia is a commons because it is licensed under the GNU Free Documentation License, which allows various uses by any user.\textsuperscript{59} In contrast to the conventional focus on the control granted by property rights,\textsuperscript{60} such a licensed commons represents a new approach to exercising property rights, so that further creativity can be built on existing work at little cost.\textsuperscript{61}

In addition to non-excludability, intellectual resources possess another public good character—non-rivalry in consumption—that CPR does not.\textsuperscript{62} One’s use of an


\textsuperscript{58} McGowan, Legal Implications, supra note 54, at 253-54.


\textsuperscript{60} See e.g. Avner Ben-Ner & Derek Jones, Employee Participation, Ownership, and Productivity: A Theoretical Framework, 34 Indus. Rel. 532 (1995) (detailing three components of property rights: the right to control the use of an asset, the right to retain any financial surplus generated from that use, and the right to sell the first two rights to a new owner).

\textsuperscript{61} See e.g. Cahir, supra note 37, at 639 (noting a situation in which de jure owners of the commons allow other individuals or entities to “engage in further communicative acts with respect to that work”); Steven Weber, The Success of Open Source 1 (2004) (arguing that contrary to property in proprietary software, property in [F/]OSS is configured fundamentally around the right to distribute, not the right to exclude) [hereinafter Weber, Success of Open Source].

\textsuperscript{62} See e.g. David Bollier, The Growth of the Commons Paradigm, in Understanding Knowledge as a Commons: From Theory to Practice 27, 28, 34 (Charlotte Hess et al. ed., 2007); Boyle, Public Domain, supra note 2, at 39; Cahir, supra note 37, at 634; Peter Drahos, The Regulation of Public Goods, 7 J. Int’l Econ. L. 321, 324 (2004); Hess & Ostron, supra note 35, at 5, 23; Stiglitz, Public Sector, supra note 17, at 84; John Quiggin & Dan Hunter, Money Ruins Everything, 30 Hastings Comm. & Ent. L.J. 203, 211 (2008) [hereinafter Quiggin & Hunter, Money Ruins Everything]. See also Benkler, Wealth of Networks, supra note 2, at 35-36 (noting information is nonrivalrous); Heverly, Information Semicommons, supra note 38, at 1157-58 (describing the non-rivalrous and non-excludable nature of information); Lessig, Future of Ideas, supra note 2, at 20-21 (asserting that
intellectual resource will not decrease the amount available to others. Consequently, such a resource will never be overused, and the tragedy of the commons will not occur. As shown in Figure 1, an intellectual commons is a pure public good because it is both non-rivalrous and non-excludable. Therefore, in the context of intellectual commons, it makes more sense for legal scholars to ignore the traditionally rivalrous nature of CPRs.

Table 1: Classification of Public and Private Goods

<table>
<thead>
<tr>
<th>Degree of Rivalry in Consumption</th>
<th>Low</th>
<th>High</th>
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<tbody>
<tr>
<td>Exclusion</td>
<td>Difcult</td>
<td>Impure Public Goods—CPR:</td>
</tr>
<tr>
<td></td>
<td>Pure Public Goods:</td>
<td>Inshore fisheries</td>
</tr>
<tr>
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<td>Intellectual commons</td>
<td>Irrigation systems</td>
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<td></td>
<td>National defense</td>
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<tr>
<td></td>
<td>Sunset</td>
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<tr>
<td></td>
<td>Easy</td>
<td>Impure Public Goods:</td>
</tr>
<tr>
<td></td>
<td>Toll or Club Goods</td>
<td>Pure Private Goods:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apple</td>
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</tbody>
</table>

Although the overuse of intellectual resources is impossible due to the resources’ non-rivalrous nature, under-use is possible based on acts of exclusion. This phenomenon is the so-called tragedy of the anticommons. The term was originally

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64 See e.g. Boyle, Second Enclosure Movement, supra note 1, at 41; Mark A. Lemley, Property, Intellectual Property, and Free Riding, 83 TEX. L. REV. 1031, 1050-51 (2005); Rose, supra note 63, at 90.

65 But see O’Mahony, Guarding the Commons, supra note 35, at 1195 (claiming that although F/OSS is non-rivalrous and non-excludable, it is not a pure public good due to the unique exercise of copyright).

66 See James M. Buchanan & Yong J. Yoon, Symmetric Tragedies: Commons and Anticommuns, 43 J. L. & ECON. 1 (2000); Cooper, From WiFi to Wikis and Open Source, supra note 21, at 130-31; Heller, GRIDLOCK ECONOMY, supra note 15, at 1-2, 37.
coined by Michael Heller, who analyzed the real property problem in the post-socialist economies of Eastern Europe.67 The tragedy takes place when multiple parties have an effective right to prevent others from using a given resource; therefore, no one has an effective right of use.68 Therefore, multiple rights of exclusion engender inefficient use (“under-use”) of the resource.69 Michael Heller and Rebecca Eisenberg argue that such a tragedy occurs in biomedical research, wherein a small number of early owners of gene patents can preclude other researchers from using essential components for subsequent innovation.70 In the digital environment, the tragedy of the anticommons occurs when overlapping rights—of different rights holders—make it more expensive to secure a license to use online intellectual resources.71

A standard solution to the tragedy of the commons is to grant private property rights.72 Nonetheless, in the tragedy of the anticommons, property rights are probably more a part of the problem than a part of the solution, because the tragedy results from the exercise of property rights. In this sense, intellectual commons resources may confront the same problem faced by CPR as being subtractable.73

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67 See generally Heller, supra note 27; HELLER, GRIDLOCK ECONOMY, supra note 15, at 143-64
68 Heller, supra note 27, at 624-26.
70 See Michael A. Heller & Rebecca S. Eisenberg, Can Patents Deter Innovation? The Anticommons in Biomedical Research, 280 SCI. 698, 700-01 (1998); see also CRAIG ALLEN NARD, THE LAWS OF PATENTS 182 (2008) (discussing the tragedy of the anticommons when there are numerous patent holders in upstream biomedical research and development).
73 See O’Mahony, Guarding the Commons, supra note 35, at 1194 (elucidating such problems faced by F/OSS development.)
2. The Intellectual Commons Movement

Due to significantly different degrees of control over information, the proprietary environment and commons environment are closely related to two opposite cultures and movements in the network age. In the proprietary environment, information is usually “produced and sold or produced to be sold”\(^\text{74}\) to maximize corporations’ profits.\(^\text{75}\) It is a commercial culture or a read-only culture, in which consumers are only allowed to receive information passively.\(^\text{76}\) One cannot use the proprietary information without permission. Therefore, it is also a permission culture, in which exclusive control over information is the norm and the law.\(^\text{77}\) In recent years, proprietary control has increasingly expanded in the digitally-networked environment due to progressively stronger copyright protection\(^\text{78}\) and digital rights management (DRM) techniques.\(^\text{79}\) As the degree of control increases, the commons environment

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\(^{75}\) See Elkin-Koren, \textit{What Contracts Cannot Do, supra} note 38, at 386.

\(^{76}\) Lessig, Free Culture, \textit{supra} note 3, at 3; Lawrence Lessig, \textit{Remix: Making Art and Commerce Thrive in the Hybrid Economy} 36-38; 97-98, 100 (2008) [hereinafter Lessig, Remix].

\(^{77}\) \textit{Lessig, Free Culture, supra} note 3, at 7-8; Lessig, \textit{Re-crafting a Public Domain, supra} note 5, at 61.


\(^{79}\) DRM techniques are technologies that enable media companies to limit, monitor, and control the transport and use of their products. Such techniques, widely adopted by the digital media industry, restrict public access to information. These non-negotiable arrangements of digital materials often prohibit fair use and prohibit information sharing that seemed closer at hand with the Internet. See e.g. Electronic Frontier Foundation, \textit{Digital Rights Management and Copy Protection Schemes, at http://www.eff.org/IP/DRM/} (last visited May 26, 2009); LASSICA, DARKNET, \textit{supra} note 74, at 118; \textit{Lessig, Free Culture, supra} note 3, at 147-53; Lessig, \textit{Re-crafting a Public Domain, supra} note 5, at 62-63; \textit{Lessig, Remix, supra} note 76, at 99; Kapczynski, \textit{Access to Knowledge, supra} note 78, at 823-24; Madhavi Sunder, \textit{IP\(^{\text{P}}\)}, 59 \textit{St. L. Rev.} 257, 281 (2006) [hereinafter Sunder, \textit{IP\(^{\text{P}}\)}]. Relying on DRM techniques, media industries went one step further and pressed the U.S. federal government to pass DMCA that would infuse in these techniques the force of law and that would, thus, strengthen the industries’ control over their products. The DMCA imposes criminal penalties on individuals who circumvent “technological measures” or who distribute circumventing tools. See 17 \textit{U.S.C.} \textsection 1201 (prohibiting the circumvention of technology that protects a specified work); Kapczynski, \textit{Access to Knowledge, supra} note 78, at 824; LASICA, DARKNET, \textit{supra} note 74, at 140-41. See also BEnKlER, \textit{Wealth of Networks, supra} note 2, at 25 (noting Hollywood’s effort to implement DRM system in
faces a threat of shrinkage. As a result, distributed creativities may be blocked by such a permission culture. Professor James Boyle has referred to this trend of expanding private control as the second enclosure movement after the enclosure movement in England during medieval times, when new landholders enclosed their land after identifying it as private property.

In contrast, consumers in the commons environment can not only passively consume intellectual resources, but also actively participate in their production. Therefore, this environment is closely tied to a read-and-write culture, which is very different from traditional read-only or permission culture. It is in a “Participation Age,” rather than in the traditional “Information Age.” When the Internet was first created, its architecture effectively enabled the wide distribution and reuse of the commons. Nonetheless, due to the second enclosure movement, the original online commons environment has been eroding. Consequently, IP scholars have become aware of both the trend of the privatization of intellectual commons and the...
shrinkage of the public domain. They believe that although the Internet has promised unprecedented opportunities for human creativity, communications, and access to information, the expanding copyright laws have imposed restrictions on these possibilities. Moreover, given the increasing power of copyright law, technology, and the market, the freedom to cultivate and spread our culture has been eroded. Accordingly, numerous opportunities for new and valuable innovation and creativity will be lost.

Such awareness has led to a series of intellectual commons movements that aim to protect commons from enclosure. These are countermovements of the second enclosure movement and oppose proprietary claims in our information economy. The first of these was the F/OSS movement, caused by “a dissatisfaction with proprietary models for software development that emphasize intellectual property

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88 See e.g. Boyle, Second Enclosure Movement, supra note 1, at 48; Dan Hunter, Culture War, 83 TEX. L. REV. 1105, 1107-10 (2005); Hess & Ostrom, supra note 35, at 14; Lastowka, Digital Attribution, supra note 50, at 46; LESSIG, CODE, at 225; LESSIG, FREE CULTURE, supra note 3, at 41-47, 184-85; LESSIG, Re-crafting a Public Domain, supra note 5, at 62.

89 LESSIG, FREE CULTURE, supra note 3, at 168-73, 181,186, 256, 261.

90 Id. at 168-73, 181,186, 256, 261.

91 See e.g. BOYLE, PUBLIC DOMAIN, supra note 2, at 239-42 (introducing the cultural environmentalism as a social and political movement); Elkin-Koren, What Contracts Cannot Do, supra note 38, at 387 (noting Creative Commons’s social movement against the enclosure of IP); Hess & Ostrom, supra note 35, at 4 (noting the information commons movement in the digital era); Kapczynski, Access to Knowledge, supra note 78, at 830, 855, 858 (referring to this whole movement as “access to knowledge movement” and positioning “commons” in the center of the movement); Loren, supra note 54, at 283-88 (describing F/OSS and CC as social movements).

92 BENKLER, WEALTH OF NETWORKS, supra note 2, at 26.

93 See e.g. Loren, supra note 54, 283-85; SUNSTEIN, INFOTopia, supra note 56, at 168-72.
rights and discourage knowledge-sharing.”  

Following the concept of the F/OSS movement, the free culture movement advocates preserving a “permission free” and “lawyer free” zone to build our culture upon our past. The free culture movement seeks to “build a layer of reasonable copyright on top on the extremes that now reign.” As described by Lessig, free is “in the sense that the culture and its growth would no longer be controlled by a small group of [entities].” Correspondingly, in academia, the open access movement has been seeking to promote the free distribution of scholarly material through the Internet. Similarly, the Open Educational Resources (OER) movement supports free uses of digital teaching, learning, and research resources.

In summary, the commons movements not only promote the idea of knowledge as public goods but also create the conditions for creative activities to become an

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95 LESSIG, FREE CULTURE, supra note 3, at 283; Lessig, Re-crafting a Public Domain, supra note 5, at 57-58, 71, 77.

96 Christine Harold, OurSpace: Resisting the Corporate Control of Culture 143-45 (2007) [hereinafter Harold, OurSpace]; Lessig, Free Culture, supra note 3, at 168-73.

97 LESSIG, FREE CULTURE, supra note 3, at 282.

98 Id. at 94.


ongoing and public process. Furthermore, the movements have provided crucial value for various NPOs’ ideological orientation in the commons discourse.\textsuperscript{101}

\textsuperscript{101} See Dimaggio & Anheier, \textit{Sociology of Nonprofit Organizations}, supra note 16, at 145 (“NPOs are often based on strong ideological…orientations: value-rational rather than means-rational.”)
CHAPTER 3 NPOs AND THE COMMONS ENVIRONMENT

This section will introduce the concept of the NPO and the roles of different institutional forms in the proprietary and commons environments. By providing an overview of three primary institutional forms in two intellectual arenas, this section situates the study within current scholarship. Thereafter, this section will focus on NPOs’ social function in the commons environment.

A. What is an NPO?

Nonprofit Organizations (NPOs), sometimes collectively referred to as the “voluntary sector,” are private organizations that are restricted from distributing any profit to anyone associated with the said organizations. Scholars have regarded such a non-distribution constraint as NPOs’ most important institutional characteristic and developed NPO theories based on that characteristic. As a result, NPOs do not seek

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104 See e.g. Avner Ben-Ner & Benedetto Gui, The Theory of Nonprofit Organizations Revisited, in The Study of the Nonprofit Enterprise: Theories and Approaches 3, 5 (Helmut Anheier & Avner Ben-Ner ed., 2003) [hereinafter Ben-Ner & Gui, Theory of Nonprofit Organizations]; Frumkin, On Being Nonprofit, supra note 102, at 4; Galaskiewicz & Bielefeld, supra note 103, 205-09; Hansmann, Nonprofit Enterprise, supra note 103, at 838; Hansmann, Reforming Nonprofit Corporation Law, supra note 10, at 505-07, 511, 553; Steinberg, Economic Theories, supra note 103, at 118; Weisbrod, Nonprofit Economy, supra note 103, at 1. But see Alberto Bacchiega & Carlo Borzaga, The
to maximize financial profit for distribution. Nonetheless, an NPO can still earn surpluses, and use them for its own purposes or for other charitable purposes.\(^{105}\) The United States law encourages NPOs by exempting them from certain taxes\(^ {106}\) and by subsidizing them based on the belief that NPOs provide outputs that are not obtainable from proprietary firms.\(^ {107}\)

Internal Revenue Code (I.R.C.) §501(c) exempts a number of NPO categories from income tax.\(^ {108}\) Among the different types of NPOs listed in §501(c), a large percentage of these organizations are registered under § 501(c)(3),\(^ {109}\) which includes entities “organized and operated exclusively for religious, charitable, scientific, testing for public safety, literary, or educational purposes.”\(^ {110}\) NPO scholars indicated that §501(c)(3) organizations are “public benefit” organizations, whereas other NPOs listed in §501(c)(4)–(25) are “mutual benefit” entities.\(^ {111}\) One distinction between these two types of NPO is that §501(c)(3) organizations primarily provide public

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\(^{105}\) See Hansmann, Nonprofit Enterprise, supra note 103, at 838. See also John Markoff, When Tech Innovation Has a Social Mission, N.Y. TIMES, Apr. 13, 2008, at 4 (reporting several NPOs with significant revenues in Silicon Valley).

\(^{106}\) This is why the nonprofit sector was once called “the tax-exempt sector.” See Frumkin, On Being Nonprofit, supra note 102, at 10-11.


\(^{108}\) I.R.C. § 501.


\(^{110}\) I.R.C. § 501(c)(3).

\(^{111}\) Siobhan O’Mahony, Nonprofit Foundations and Their Role in Community-firm Software Collaboration, in Perspectives on Free and Open Source Software 393, 413 note 19 (Joseph Feller et al. eds., 2005) [hereinafter O’Mahony, Nonprofit Foundations]; John Simon et al., supra note 107, at 269, 268.
benefits, whereas §501(c)(4)−(25) organizations provide mutual benefits to a specific
group.112 From the legal perspective, although all NPOs are exempt from corporate
tax, only §501(c)(3) organizations can deduct contributions.113 NPOs studied
in this Dissertation are registered either as § 501(c)(3) organizations or § 501(c)(6)
organizations. § 501(c)(3) organizations must be primarily devoted to charitable,
religious, educational, scientific, literary, or public safety endeavors,114 whereas §
501(c)(6) organizations are business leagues and groups, such as chambers of
commerce.115

B. Institutional Forms and Intellectual Resources

There are three major types of formal organization in every society: proprietary,
public, and voluntary. Each type has its own strengths and weaknesses in meeting
various societal demands. Proprietary firms are usually more flexible and more
efficient in meeting consumer demands116 because they have to maximize the profits
that they can distribute to owners and managers.117 However, proprietary firms are
unlikely to respond to public-interest issues, such as pollution control and safety

112 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 8.
113 Id. at 55, 100. Boris I. Bittker & George K. Rahdert, The Exemption of Nonprofit Organizations from
Federal Income Taxation, 85 YALE L.J. 299, 347 (1976); Weisbrod, Nonprofit Economy, supra note
103, at 9-10; BURTON A. WEISBROD, THE VOLUNTARY NONPROFIT SECTOR: AN ECONOMIC ANALYSIS
66 (1977) [hereinafter WEISBROD, VOLUNTARY NONPROFIT SECTOR].
114 I.R.C. § 501(c)(3).
115 I.R.C. § 501(c)(6).
116 See e.g. Eleanor Brown & Al Slivinski, Nonprofit Organizations and the Market, in THE NONPROFIT
SECTOR: A RESEARCH HANDBOOK 140, 140 (Walter W. Powell ed., 2006); FRUMKIN, ON BEING
NONPROFIT, supra note 102, at 81; WEISBROD, NONPROFIT ECONOMY, supra note 103, at 18; see also
Steinberg, Economic Theories, supra note 103, at 127 (noting that “attention to consumer demands are
the hallmark of the [proprietary] sector”). But see DiMaggio & Anheier, Sociology of Nonprofit
Organizations, supra note 16, at 147 (introducing studies which find that NPOs are more efficient than
their for-profit counterpart in the hospital industry).
117 See e.g. FRUMKIN, ON BEING NONPROFIT, supra note 102, at 125; Steinberg, Economic Theories,
(disagreeing that profit-maximization is for-profits’ single organizational goal).
protection, as actively and efficiently as the other sectors, since the profit-motivated firms usually only consider activities that affect their revenues or costs. Governments, on the other hand, obtain centralized power from the political process and have the potential to correct market failure. With the power to tax, governments can encourage public goods provision through subsidies, or can discourage unwanted private activities through tax levies. Governments can use coercive power to overcome the free-rider problem. Nevertheless, government decisions are easily influenced by industries and pressure groups. Therefore, the policy-making process usually ignores the interests of weakly organized groups.

NPOs, as the third sector in the society, mirror the organizational advantages and disadvantages of the proprietary firms and the government. NPOs are usually much more responsive than proprietary firms to public-interest issues. Moreover, in contrast to the government, they are less subject to the transaction costs stemming from the political process. However, NPOs have their own limits. They cannot levy taxes, and they are much more restricted than proprietary firms in the types of activities they pursue. Charges against NPOs also include the notion that without an effective incentive mechanism, NPO managers are usually less efficient than those in

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118 WEISBROD, NONPROFIT ECONOMY, supra note 103, at 5, 7.
119 See id. at 19-20.
120 Id. at 20-21.
121 Id. at 20.
123 See WEISBROD, NONPROFIT ECONOMY, supra note 103, at 5.
124 Id.
125 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 3.
126 For example, an NPO does not have access to capital market for equity capital. See e.g. Ben-Ner & Gui, Theory of Nonprofit Organizations, supra note 104, at 18; FRUMKIN, ON BEING NONPROFIT, supra note 102, at 83-84; Hansmann, Reforming Nonprofit Corporation Law, supra note 10, at 507, 549.
proprietary firms;\textsuperscript{127} as a result, NPOs are less efficient than proprietary firms.\textsuperscript{128} Nonetheless, this deficiency may be overcome if NPO managers obtain personal fulfillment from their work.\textsuperscript{129}

Accordingly, as Table 2 reveals, different institutional forms exist in both proprietary and commons production systems.\textsuperscript{130} In the proprietary system, the government plays a critical role in designing IP laws\textsuperscript{131} as well as in maintaining public IP administration, such as the United States Patent and Trademark Office (USPTO) and the United States Copyright Office. Government’s monopoly over coercive power also supports the property system through the public enforcement of law. Arguably, an IP system provides incentives to proprietary firms to create and to innovate, and proprietary firms appropriate IP rights to gain business advantages.\textsuperscript{132} Some NPOs are also critically important in the commercial IP system. For example, the American Society of Composers, Authors, and Publishers (ASCAP) and Broadcast Music, Inc. (BMI) are NPOs that assist their members in collecting royalties from

\textsuperscript{127} See e.g. WEISBROD, NONPROFIT ECONOMY, supra note 103, at 23; Weisbrod, Institutional Form and Organizational Behavior, supra note 104, at 71-72.

\textsuperscript{128} WEISBROD, NONPROFIT ECONOMY, supra note 103, at 23; Weisbrod, Institutional Form and Organizational Behavior, supra note 104, at 71-72.

\textsuperscript{129} WEISBROD, NONPROFIT ECONOMY, supra note 103, at 23.


\textsuperscript{131} See F. Scott Kieff, Coordination, Property, and Intellectual Property: An Unconventional Approach to Anticompetitive Effects and Downstream Access, 56 EMORY L. J. 327, 363 (2006)[hereinafter Kieff, Coordination, Property, and Intellectual Property] (describing how the operation of the three branches of the government affects private entitlement and property rules); see also WEISBROD, NONPROFIT ECONOMY, supra note 103, at 21 (noting that “[g]overnment could…alter the incentives facing proprietary firms so that they would change their behavior.”)

\textsuperscript{132} See e.g. BENKLER, WEALTH OF NETWORKS, supra note 2, at 43-44 (categorizing businesses making profits based on the exclusiveness of IP ); SUNSTEIN, INFOTPIA, supra note 56, at 164-65 (stating that private property protect companies’ valuable information); Elkin-Koren, What Contracts Cannot Do, supra note 38, at 385, note 34 (noting that Microsoft’s financial investment is secured by IP rights); Kapczynski, Access to Knowledge, supra note 78, at 820, 845 (noting that “IP rights…create opportunities for potentially lucrative rents”); Lastowka, Digital Attribution, supra note 50, at 53 (stating Bill Gates’s perspective that intellectual “progress is dependent upon proprietary rights.”)
licensees. 133 The Motion Picture Association of America (MPAA) is a trade association of movie studios, advocating strong copyright protection. 134 The Internet Corporation for Assigned Names and Numbers (ICANN) is an NPO managing the assignment of domain names, Internet protocol addresses, and disputes regarding these assignments. 135

These three primary sectors also play specific roles in the commons environment. For example, governments may subsidize basic research and the development of F/OSS. 136 An increasing number of for-profit firms, such as Dell, Hewlett-Packard, Hitachi, IBM, Intel, Motorola, Nokia, Oracle, Philips, Sony, and Sun Microsystems, have also begun to invest in the production of intellectual commons, 137 although these

133 See e.g. Heller, Gridlock Economy, supra note 15, at 72. For the historic background of ASCAP and BMI, see Paul Goldstein, Copyright’s Highway: From Gutenberg to the Celestial Jukebox 53-61 (rev. ed. 2003).
134 MPAA, About Us; http://www.mpaa.org/AboutUs.asp (last visited May 26, 2009).
firms cannot directly appropriate the value of such commons. Other commercial F/OSS companies, such as Red Hat and SourceForge, make their money by selling updates, support, and services to companies that use F/OSS, rather than from the upfront license fees that traditional software companies charge.

Among these three sectors, the NPO sector is probably the most active in the commons environment. A number of NPOs, including CC, FSF, and the Wikimedia Foundation, have played important roles in cultivating the commons environment. The roles of these organizations are the focus of this Dissertation.

Table 2: Institutional Forms in the Proprietary and the Commons Environments

<table>
<thead>
<tr>
<th>Institutional forms</th>
<th>Degree of exclusiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High (Proprietary)</td>
</tr>
<tr>
<td>Government</td>
<td>Provide IP laws and enforcement as incentives</td>
</tr>
<tr>
<td>Proprietary firms</td>
<td>Disney, Hollywood, Microsoft, etc.</td>
</tr>
<tr>
<td>NPOs</td>
<td>ASCAP, BMI, MPAA, ICANN</td>
</tr>
</tbody>
</table>

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138 See Lerner & Tirole, Economics of Open Source, supra note 137, at 224-25 (arguing that although proprietary firms cannot directly capture the value of an F/OSS program’s improvement, they can profit indirectly through the sale of more proprietary complementary goods); Ronald J. Mann, Commercializing Open Source Software: Do Property Rights Still Matter?, 20 HARV. J. L. & TECH. 1, 26 (2006) (arguing that IBM can not profit from selling Linux or Apache programs, but that it can earn revenue from the value chain that use these programs) [hereinafter Mann, Commercializing Open Source]; Robert P. Merges, A New Dynamism in the Public Domain, 71 U. CHI. L. REV. 183, 192-93 (2004) (asserting that rather than making a profit directly, IBM’s F/OSS strategy can decrease Microsoft’s monopoly in the market).

139 FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 47-48; Lerner & Tirole, Economics of Open Source, supra note 137, at 225; LESSIG, REMIX, supra note 76, at 181-83; ZITTRAIN, FUTURE OF THE INTERNET, supra note 151, at 64.

140 But see Telephone Interview with David Bollier, Co-founder and Board Member, Public Knowledge (Oct. 11, 2007) [hereinafter Interview with Bollier] (viewing commons as the third sector, which is different from the government and business); Bollier, Commons Movement, supra note 54, at 2 (perceiving the commons itself as the third sector); TOMALES BAY INSTITUTE, THE COMMONS RISING 2-3, 24 (2006), onthecommons.org/files/Commons_Rising_06.pdf (identifying commons as an economic sector as opposed to for-profits); ROGER A. LOHMANN, THE COMMONS: NEW PERSPECTIVES ON NONPROFIT ORGANIZATIONS AND VOLUNTARY ACTION 59-60 (1992) (identifying commons, states, and markets as three primary categories of social space) [hereinafter LOHMANN, COMMONS].
C. NPOs in the Commons Environment

Based on the analogy of the natural environment and the IP environment, Professor Boyle notices that, similar to the environmental movement, an institutional diversity has emerged in the commons movement.141 By “institutional diversity,” Boyle means various organizations that have their own approaches to address issues relevant to the movement.142 Although Boyle identifies several NPOs, such as EFF, PK, CC, and FSF, as primary supporters of the movement, he does not map out all nonprofit actors in the commons environment.

Most current NPO theories treat the nonprofit sector as a response to gaps in the supply of public goods.143 In this section, I attempt to identify the primary public goods produced by these NPOs. By categorizing these public goods, a general picture of how various NPOs operate in the commons environment will emerge. It should be noted that many of the public goods introduced in below pages are crucial infrastructure resources for the commons environment.144 Moreover, the choice

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141 Boyle, Public Domain, supra note 2, at 243.
142 Id.
144 Cf. Ostrom & Hess, Knowledge Commons, supra note 35, at 66-68 (noting that infrastructure resources are required in all effective commons governance systems).
provided by NPOs over other proprietary products or services may sometimes be considered as a public good as well.\textsuperscript{145}

1. Social Norms and Licensing Terms

NPOs have played an important role in a wide range of America’s major social movements.\textsuperscript{146} For participants of such movements, NPOs can help to propagate their ideological visions to society.\textsuperscript{147} Since preserving the commons has become the focus of a series of social movements in recent years, it is not surprising to find that these movements also have their roots in the nonprofit sector. There are two important premises underlying the commons movement: the sharing norms and the licensing terms that enforce such norms.\textsuperscript{148} Interestingly, NPOs have played a crucial role in reinforcing the norms and producing the licensing terms.

Many community norms now enforced by F/OSS licenses existed before any specialized NPOs were formed and before F/OSS licenses were introduced. In the 1960s and 1970s, code sharing between programmers in commercial and academic institutions was quite common.\textsuperscript{149} According to Richard Stallman, when he was working at the MIT Artificial Intelligence Lab in the 1970s, the community

\begin{flushleft}
\textsuperscript{145} See e.g. Markoff, \textit{supra} note 105 (stating that “Mozilla’s mission to preserve choice and innovation on the Internet, which it considers a social good.”) \textit{Cf.} Lemley, \textit{supra} note 64, at 1067 (“competition itself is a public good.”)
\textsuperscript{147} See Ben-Ner & Gui, \textit{Theory of Nonprofit Organizations, supra} note 104, at 17.
\textsuperscript{148} \textit{Cf.} Peter Levine, \textit{Collective Action, Civic Engagement, and the Knowledge Commons, in Understanding Knowledge as a Commons: From Theory to Practice} 246, 254 (Charlotte Hess et al. ed., 2007) (stating that “commons are made possible by demanding moral norms and/or enforceable agreements”).
\textsuperscript{149} Lerner & Tirole, \textit{Economics of Open Source, supra} note 137, at 200-01; \textit{Peter R. Monge & Noshir S. Contractor, Theories of Communication Networks} 321 (2003).
\end{flushleft}
recognized software-sharing customs, asking to see the source code, to change it, or to modify it.\footnote{150} Stallman embraced the sharing culture and its openness.\footnote{151} Nevertheless, such norms were quickly eroded by increasing proprietary control over software.\footnote{152} In the early 1980s, the informal norms of sharing basic operating code was threatened when AT&T decided to enforce its IP rights over the Unix system.\footnote{153} This decision illustrates the fact that without a formal structure, norms may easily weaken.\footnote{154} As a result, Stallman institutionalized these norms of free code distribution and modification by establishing the FSF in 1985,\footnote{155} which is the first NPO to support the idea of protecting software commons from enclosure.

According to Stallman, all software should be free in the sense of “free speech,” as opposed to the sense of “free beer.” The free software movement led by the FSF has led programmers and researchers to think first about how to write the best software code and about IP control of the code thereafter.\footnote{156} The most important innovation of the FSF is its formal licensing procedure.\footnote{157} The licensing process has been recognized as a key factor in the success of F/OSS because it facilitates the


\footnote{151} \textit{Id.} at 15-16; Jonathan Zittrain, The Future of the Internet and How to Stop It 77, 131-32 (2008) [hereinafter Zittrain, \textit{Future of the Internet}].

\footnote{152} See e.g. Stallman, \textit{GNU Project}, supra note 150, at 15-16; LESSIG, \textit{FREE CULTURE}, supra note 3, at 279-80. See also McGowan, \textit{Legal Implications}, supra note 54, at 282 (quoting Russ Allbery’s opinion concerning hacker culture’s danger of being swept away).

\footnote{153} Lerner & Tirole, \textit{Economics of Open Source}, supra note 137, at 201; MONGE & CONTRACTOR, supra note 149, at 321.

\footnote{154} WEBER, \textit{SUCCESS OF OPEN SOURCE}, supra note 61, at 161; see also Lerner & Tirole, \textit{Economics of Open Source}, supra note 137, at 201 (indicating that the informality of cooperative software development process proved to be problematic since property right was not carefully delineated).


\footnote{156} Steve Lohr, Go To 214 (2001)

\footnote{157} Lerner & Tirole, \textit{Economics of Open Source}, supra note 137, at 201.
enforcement of F/OSS community norms and clarifies the distinctions between F/OSS and proprietary software.  

By defining ownership functionally, F/OSS movement leaders have designed many of the F/OSS licenses to protect the norms of sharing and related freedoms. Professor Steven Weber even regards the licenses as constituting the social structure in the F/OSS world. Although many other NPOs have designed other F/OSS licenses for their own projects, the GNU Public License (GPL), developed by the FSF and adopted by the GNU/Linux operating system, is the most famous and dominant licensing mechanism among all the F/OSS license models. The GPL requires anyone who redistributes modified versions of GPL software to license the software’s source code to users.

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158 See David McGowan, Legal Implications, supra note 54, at 245, 287.
159 See e.g. Lessig, Limits in Open Code, supra note 42, at 764; Lessig, Free Culture, supra note 3, at 280; Tim Wu, On Copyright’s Authorship Policy, 2008 U. Chi. Legal F. 335, 344 (2008) [hereinafter Wu, Authorship Policy]; Stallman, GNU Project, supra note 150, at 20-21; WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 49.
160 WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 179-85.
162 GNU is an acronym for “GNU’s Not UNIX.” BENKLER, WEALTH OF NETWORKS, supra note 2, at 64. Variants of the GNU open-rating system, which use the kernel Linux, are now widely available; although these systems are often referred to as “Linux,” they are more accurately called GNU/Linux systems. See Free Software Foundation, The GNU Operating System, http://www.gnu.org/ (last visited May 26, 2009).
163 See e.g. BENKLER, WEALTH OF NETWORKS, supra note 2, at 64; DEEK & MCHugh, OPEN SOURCE, supra note 136, at 252; Carver, supra note 57, at 447; ROD DIXON, OPEN SOURCE SOFTWARE LAW 19 (2004); GOLDMAN & GABRIEL, INNOVATION HAPPENS ELSEWHERE, supra note 54, at 116; McGowan, Legal Implications, at 253; O’Mahony, Guarding the Commons, supra note 35, at 1186.
164 Section 2 of the GPL provides the following:
You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all
Stallman believes that GPL’s unique distribution terms maintain the freedom associated with the free software and preclude the software from being appropriated proprietarily.\footnote{See e.g. LESSIG, FREE CULTURE, supra note 3, at 280; O’Mahony, Guarding the Commons, supra note 35, at 1183; see also David Bollier, The Rediscovery of the Commons, 4 UPGRADE 10, 11 (2003) (arguing that “GPL assures that fruits of the commons will stay in the commons. This gives the commons significant structural advantages over corporate-sponsored software development.”).} The FSF has also supported the free software movement in many other ways. It has not only mobilized proponents to fight against software patents, but also creates a network of individuals who regularly discuss the concept of free software. In this way, the FSF works to convince the public that free software is more beneficial to society than proprietary software.

The Open Source Initiative (OSI) is another NPO that constitutes a mechanism for enforcement of certain industry norms. The OSI was established because many software developers felt that free software movement led by FSF had a tarnished reputation in the business world as a result of the more radical ideas associated with free software.\footnote{Interview with Danese Cooper; Board Member, OSI, in Palo Alto, Cal. (Jun. 12, 2008); OSI, History of the OSI, http://www.opensource.org/docs/history.php (last visited May 26, 2009); but see Stallman, GNU Project, supra note 150, at 22 (articulating that the free software philosophy is not against business).} In contrast with FSF’s ethical position focused on the freedom associated with software, the OSI takes a pragmatic position regarding the market merits of the F/OSS.\footnote{FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 41-44.} The OSI has published its Open Source Definition (OSD), which enumerates several criteria for an open source license,\footnote{See OSI, The Open Source Definition, http://www.opensource.org/docs/definition.php (last visited May 26, 2009).} and the OSI analyzes third parties under the terms of this License. . . . [W]hen you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it. . . . [T]he intent is to exercise the right to control the distribution of derivative or collective works based on the Program. Free Software Foundation, GNU General Public License, Version 2 (June 1991), http://www.gnu.org/copyleft/gpl.html (last visited May 26, 2009).

licenses’ consistency with the OSI’s definition of “open source.” License approval from the OSI has become a precondition for any software to be regarded as open source. In this sense, the OSI plays the role of “a standard builder,” “a watchdog,” and “a trusted standards body” for the F/OSS community.

Similarly, licensing plays a decisive role in facilitating commons production other than F/OSS. CC is an NPO that has worked to adapt the F/OSS movement model to other forms of creative works. Through a wide range of licensing terms, CC offers a web application that enables users to donate their works to the public domain, or to freely license their works for certain uses and to simultaneously retain copyright. CC aims to “develop a rich repository of high-quality works in a variety of media, and to promote an ethos of sharing, public education, and creative interactivity.” Scholars have recognized that CC has initiated a global social movement, advocating for the norms of information sharing and reusing.

Through the production and promotion of licenses, the FSF, OSI, and CC are enabling creativity to spread more easily and promoting the philosophy underlying the commons movement. They use private ordering to build a commons environment and introduce an innovative way of exercising legal rights to bring about social change. In this sense, the FSF, OSI, and CC are providing “prescriptive norms” or “normative norms.”

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170 Rosen, Open Source Licensing, at 3.
171 FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 64, 66.
172 See e.g. Eric E. Johnson, Rethinking Sharing Licenses for the Entertainment Media, 26 CARDOZO ARTS & ENT. L.J. 391, 407 (2008); Loren, supra note 54, at 285-86.
173 BOYLE, PUBLIC DOMAIN, supra note 2, at 180-81; Loren, supra note 54, at 285, 288-94.
176 Elkin-Koren, What Contracts Cannot Do, supra note 38, at 394.
norms” to teach creators how they should deal with their intellectual works. These NPOs have provided formal organizations for their founders to pursue their ideas systematically and within institutional settings. Moreover, by facilitating such norms, these NPOs provide essential public goods to those who share their views in the movement.

2. Organizational Support for Peer-production Projects

Participants in the F/OSS and cultural commons projects, such as Gutenberg and Wikipedia, are all voluntary contributors who donate their time and intellectual resources. The creative process inherent in these projects generally involves large, globally distributed communities of creators collaborating primarily through the Internet. These decentralized methods of voluntary information gathering and information exchange are referred to as “peer production.”

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177 “Prescriptive norms” or “normative norms” are social norms regarding how an individual should behave. See F. Scott Kieff, Facilitating Scientific Research: Intellectual Property Rights and the Norms of Science—A Response to Rai & Eisenberg, 95 NW. U. L. REV. 691, 693 (2001). Such social norms are different from “descriptive norms,” which refer to how individuals tend to behave. Id. at 696.

178 See e.g. McGowan, Legal Implications, supra note 54, at 242, 244-45 (suggesting F/OSS licenses enforce norms regarding how code may be freely copied, modified, and distributed); O’Mahony, Guarding the Commons, supra note 35, at 1187 (concluding from interviews with F/OSS developers that GPL license designed by FSF is used to “codify a norm of reciprocity and temperance…to prevent code from becoming subtractable.”)

179 C.f. Hansmann, Nonprofit Enterprise, supra note 103, at 854, note 59. See also Robert D. Benford & David A. Snow, Framing Process and Social Movements: An Overview and Assessment, 26 ANN. REV. SOC. 611, 613 (2000) (asserting that a key task of movement actors is to “produce and maintain…meaning for constituents, antagonists, and bystanders or observers.”)

180 See text accompanying with note 202-237.

181 The term “peer production” has been popularized by Professor Yochai Benkler. He defines peer production as “production systems that depend on individual action that is self-selected and decentralized, rather than hierarchically assigned.” See BENKLER, WEALTH OF NETWORKS, supra note 2, at 62. In other words, peer production represents “a process by which many individuals, whose actions are coordinated neither by managers nor by price signals in the market, contribute to a joint effort that effectively produces a unit of information or culture.” Benkler, Freedom in the Commons, supra note 37, at 1256 (2003). See also TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 11 (defining peer production as the phenomenon that “masses of people and firms collaborate openly to drive innovation and growth in their industries.”) Other scholars may use different terms to denote similar concepts. For example, Feller and Fitzgerald use “parallel development” to refer to “the practice of individual (or small groups of) developers working on one aspect of a large system at the same time that other
environment, many NPOs provide organizational support for these peer-production projects.

Some may have the impression that F/OSS and other commons communities are primarily informal. Indeed, over 100,000 F/OSS projects do not constitute legal entities. They use the free project hosting service provided by SourceForge, that provides free coordination mechanisms, such as a Concurrent Versions System (CVS) repository, mailing lists, message forums, bugging tracking tools, and others. However, the majority of the prominent F/OSS projects have their own hosting NPOs. For example, the FSF is the institutional host for the GNU project. The Apache Software Foundation has been successfully supporting Apache-server software development and other F/OSS. The Mozilla Foundation exists to support, individuals (or groups) work on another aspect of the same system.” FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 85. Tapscott and Williams use peer production and “mass collaboration” interchangeably. TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 297. Cooper and Shirky uses “collaborative production” to denote the same phenomenon. Cooper, From WiFi to Wikis and Open Source, supra note 21, at 126; SHIRKY, HERE COMES EVERYBODY, supra note 72, at 109.

182 See e.g. Rishab Aiyer Ghosh, Why Collaboration Is Important (Again), in CODE: COLLABORATIVE OWNERSHIP AND THE DIGITAL ECONOMY 1, 1 (Rishab Aiyer Ghosh ed., 2005); McGowan, Legal Implications, supra note 54, at 253. See also Edward Lee, Warming up to User-Generated Content, 2008 U. ILL. L. REV. 1459, 1460 (2008) (stating that user-generated content is produced from “unorganized, informal practice of various, unrelated users”). But see FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 160 (indicating that the F/OSS development process is sometimes more like the cathedral mode than the bazaar mode).

183 CVS allows developers around the globe to work on a local copy of codebase and is the dominant version control platform in the F/OSS world. See e.g. DEEK & MCHUGH, OPEN SOURCE, supra note 136, at 120-24; ZITTRAIN, FUTURE OF THE INTERNET, supra note 151, at 94; RUBEN VAN WENDEL DE JOODE ET AL., PROTECTING THE VIRTUAL COMMONS: SELF-ORGANIZING OPEN SOURCE AND FREE SOFTWARE COMMUNITIES AND INNOVATIVE INTELLECTUAL PROPERTY REGIMES 16-17 (2003) [hereinafter VAN WENDEL DE JOODE ET AL., PROTECTING THE VIRTUAL COMMONS].


and to provide leadership to Mozilla projects, which are derived from the Netscape browser software.\textsuperscript{187} Table 3 is a list of NPOs that support certain F/OSS projects.

Table 3: F/OSS Foundations

<table>
<thead>
<tr>
<th>NPO</th>
<th>I.R.C. Category</th>
<th>Main F/OSS Project Hosted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apache Software Foundation</td>
<td>501(c)(3)</td>
<td>Apache Projects\textsuperscript{188}</td>
</tr>
<tr>
<td>Eclipse Foundation</td>
<td>501(c)(6)</td>
<td>Eclipse Platform\textsuperscript{189}</td>
</tr>
<tr>
<td>FreeBSD Foundation</td>
<td>501(c)(3)</td>
<td>Free BSD Projects\textsuperscript{190}</td>
</tr>
<tr>
<td>Free Software Foundation</td>
<td>501(c)(3)</td>
<td>GNU Project\textsuperscript{191}</td>
</tr>
<tr>
<td>GNOME Foundation</td>
<td>501(c)(3)</td>
<td>GNU Network Object Model Environment Project\textsuperscript{192}</td>
</tr>
<tr>
<td>Mozilla Foundation</td>
<td>501(c)(3)</td>
<td>Mozilla Projects, including Firefox web browser and Thunderbird e-mail software\textsuperscript{193}</td>
</tr>
<tr>
<td>Open Source Application Foundation</td>
<td>501(c)(3)</td>
<td>“Chandler,” a desktop PIM application, and “Cosmo,” a server system\textsuperscript{194}</td>
</tr>
<tr>
<td>Linux Foundation</td>
<td>510(c)(6)</td>
<td>Linux system\textsuperscript{195}</td>
</tr>
<tr>
<td>Perl Foundation</td>
<td>501(c)(3)</td>
<td>Perl programming language\textsuperscript{196}</td>
</tr>
<tr>
<td>Python Software Foundation</td>
<td>501(c)(3)</td>
<td>Python programming language\textsuperscript{197}</td>
</tr>
<tr>
<td>XMPP Standards Foundation</td>
<td>501(c)(6)</td>
<td>Extensible Messaging and Presence Protocol (XMPP) messaging software\textsuperscript{198}</td>
</tr>
</tbody>
</table>

Although these NPOs similarly serve as institutional umbrellas for F/OSS projects, they can have different origins or development models. Some NPOs, such as

\textsuperscript{187} Mozilla Foundation, About the Mozilla Foundation, at http://www.mozilla.org/foundation/ (last visited May 26, 2009).
\textsuperscript{188} ASF, supra note 186.
\textsuperscript{190} The FreeBSD Foundation, at http://www.freebsdfoundation.org/ (last visited May 26, 2009).
\textsuperscript{191} FSF, supra note 185.
\textsuperscript{193} The Mozilla Foundation, at http://www.mozilla.org/ (last visited May 26, 2009).
\textsuperscript{194} The Open Source Application Foundation, at http://www.osafoundation.org/ (last visited May 26, 2009).
\textsuperscript{196} The Perl Foundation, at http://www.perlfoundation.org/ (last visited May 26, 2009).
the Apache Software Foundation and the GNOME Foundation, originated from the grass-roots communities of user-developers. However, more recently, a second model has emerged, in which for-profit organizations spin out internally-developed code and incorporate NPOs to attract and build F/OSS communities. Examples of this model are the Eclipse Foundation, spun-off from IBM, and the Mozilla Foundation formed by AOL. Businesses making such spin-off decisions may have numerous strategic reasons for doing so. Some businesses view the spin-off as a more active investment in F/OSS projects, whereas others may use the spin-off strategy to withdraw from a specific type of technological development.

The institutional support provided by these F/OSS foundations may differ from one another due to the nature and history of the underlying F/OSS projects. Nonetheless, many of these organizations function similarly for their communities. They act on behalf of F/OSS communities to manage property rights, to transact or communicate with other entities, to provide collective decision-making mechanisms, and to protect individual contributors from potential liability.

199 See e.g., Lerner & Tirole, Economics of Open Source, supra note 137, at 207-08 (describing how the Apache group was incorporated into the ASF); Weber, Success of Open Source, supra note 61, at 109-11 (providing a brief history of the Apache project).
201 West identifies two reasons firms release their code to form an F/OSS project: to win adoption and to gain development assistance in non-critical areas. See Joel West, How Open Is Open Enough? Melding Proprietary and Open Source Platform Strategies, 32 Res. Pol’y 1259 (2003).
202 For example, AOL created the Mozilla technology and formed the Mozilla Foundation after firing Netscape developers and structuring a deal with Microsoft. According to the deal, AOL promised that, for the subsequent 7 years, AOL would use Microsoft’s IE as the default browser for its subscribers. See Even Hansen, AOL Lays Off Netscape Developers, CNet News, Jul. 16, 2003, at http://news.com.com/2100-1032_3-1026078.html; Joel West, Patterns of Open Innovation in Open Source Software, 17, at http://www.openinnovation.net/Book/NewParadigm/Chapters/05.pdf (last visited May 26, 2009).
203 For example, for the Linux Foundation, which is supporting the development of the Linux operating system, it is uniquely and critically important to standardize the Linux system so that various applications can be built on it. The Linux Foundation, supra note 195.
a. Property Rights Management

Property rights management is one of the NPOs’ most important tasks in the commons environment. NPOs not only receive donations on behalf of F/OSS communities, but also hold and manage assets, such as hardware and other business infrastructure that is essential to F/OSS development. By owning these resources, NPOs can better meet a community’s needs and can thus prevent the community from declining. For example, John Sullivan, the Manager of Operation of the FSF, described how the organization provides infrastructure resources for the GNU community:

[The FSF] provides things like a reliable infrastructure...So people that are around to maintain servers and machines that can run the mailing lists and provide people with shell access and the sorts of things that they need to develop free software for the GNU project.

IP ownership of the code is an important asset for F/OSS communities as well. According to Cliff Schmidt, the former Vice President of Legal Affairs of the ASF,

The primary reason [to incorporate the Apache Software Foundation] was to have one entity that would be licensing software… What we wanted to do is to be able to release the collective work under one entity name and license that way… A second reason for the

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204 See e.g. ASF, supra note 336 (noting that the board of ASF’s responsibilities include managing fund, IP, and other corporate assets); Eclipse Foundation, About the Eclipse Foundation: Services of the Foundation, http://www.eclipse.org/org/ (last visited May 26, 2009) (pointing out that the Eclipse Foundation’s function includes holding and managing infrastructure resources, which are essential for F/OSS development).

205 For example, the ASF identifies the primary infrastructure resources it provides as the web serving environment, the code repositories, the mail management environment, the issue/bug tracking, and the distribution mirroring system. How the ASF Works: The Foundation Infrastructure, http://www.apache.org/foundation/how-it-works.html#meritocracy (last visited May 26, 2009).

206 See e.g. GOLDMAN & GABRIEL, INNOVATION HAPPENS ELSEWHERE, supra note 54, at 55 (stating that “[e]ach [F/OSS] community will flourish or wither depending on how well its interests are met by community resources.)

207 Telephone Interview with John Sullivan, Manager of Operations, Free Software Foundation (Apr. 4, 2008) [hereinafter Interview with Sullivan].
incorporation is to provide some liability protection for officers and directors of the corporation as they were making decisions for the interest of the group.208

David Ascher, Executive Vice president of the Python Software Foundation, also suggested that the Python Software Foundation was incorporated because Guido van Rossum, the pioneer Python developer, wanted to have an entity that could independently hold the IP rights of Python code.209

Additionally, NPOs function to handle various other IP issues for the community, such as IP management tasks pertaining to code contribution.210 As Professor Robert P. Merges describes, the tragedy of the anticommons exists in communities such as F/OSS and Wikipedia, where the transactions costs are extremely high to locate and to bargain with scattered IP owners.211 Merges’s proposal to solve such problem is to identify “good enough” representatives to administer multiple IP rights on behalf of the communities.212 In fact, several NPOs have functioned, as Merges proposes, as IP

208 Telephone Interview with Cliff Schmidt, Vice President of Legal Affairs, the Apache Software Foundation (Jul. 13, 2007) [hereinafter Interview with Schmidt]. See also WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 111 (stating that ASF’s incorporation is partly because of IP management and liability concerns).
209 Telephone Interview with David Ascher, Former Executive Vice President, Python Software Foundation (Aug. 8, 2007) [hereinafter Interview with Ascher]. See also VAN WENDEL DE JOODE ET AL., PROTECTING THE VIRTUAL COMMONS, supra note 183, at 84-85 (describing the same reason for the incorporation of the Python Software Foundation).
210 For example, the Eclipse Foundation has developed its own “committer agreement” and “IP approval process” to ensure that the contributed code is legally effective under its Eclipse Public License. See the Eclipse Foundation, About the Eclipse Foundation: Intellectual Property (IP) Management, http://www.eclipse.org/org/#!/IP%20Management (last visited May 26, 2009); the Eclipse Foundation, Intellectual Property Policy, http://www.eclipse.org/org/documents/ (last visited May 26, 2009). The Mozilla Foundation also enacted its licensing policies through a number of licensing agreements. See the Mozilla Foundation, supra note 214. The history of the Python Software Foundation is closely related to the IP status of Python code. Currently the Foundation is responsible for holding and managing code contributions. See Ascher, Python Software Foundation, supra note 161, at 1-2, 8.
212 Id. at 1189-89. Cf. Wu, Authorship Policy, supra note 159, at 340-41 (introducing the argument that having a centralized entity to manage copyrights for authors can avoid transaction costs and anticommons problems).
representatives for commons communities. Some of them, such as the ASF, serve as the single copyright holder of the underlying F/OSS projects. Sullivan of the FSF explained the organization’s such role in an interview:

[We have done] things like collecting copyright assignments and serving as a single copyright holder that could help enforce the GPL and help make sure that free software isn’t used in proprietary ways... our copyright assignment agreement gives [the contributors] a full grant-back of their rights, so they are basically enabling us to enforce the copyright on their behalf, but are not losing their own rights over the code that they wrote. So the reason we do that is to make enforcement easier for everybody...if you have ten different contributors to a project and they all are copyright holders, then it might be hard to get agreement among, or not just agreement but action from all ten of those people.213

Moreover, NPOs can register and protect trademarks to reinforce communities’ organizational identification,214 which is crucial to an individual’s participation in organizational goals.215 Brian Behlendorf, co-founder and former President of ASF, stated how a formal organization can protect Apache’s name effectively:

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213 Interview with Sullivan, supra note 207. See also VAN WENDEL DE JOODE ET AL., PROTECTING THE VIRTUAL COMMONS, supra note 183, at 80-81 (similarly describing FSF’s role as copyright collector and enforcer).

214 See e.g. DEEK & MCHUGH, OPEN SOURCE, supra note 136, at 237; RICHARD FONTANA ET AL., A LEGAL ISSUES PRIMER FOR OPEN SOURCE AND FREE SOFTWARE PROJECTS 31 (2008), available at http://www.softwarefreedom.org/resources/2008/foss-primer.pdf [hereinafter FONTANA ET AL., LEGAL ISSUES PRIMER]; Telephone Interview with Jim Zimlin, Executive Director, Linux Foundation (Aug. 17, 2007) [hereinafter Interview with Zimlin]; Ascher, Python Software Foundation, supra note 161, at 8; ASF, supra note 336; the Linux Foundation, Protect, http://www.linux-foundation.org/en/Protectthe (last visited May 26, 2009); Mozilla Foundation, Mozilla Licensing Policies, http://www.mozilla.org/foundation/licensing.html (last visited May 26, 2009); Interview with Randal, infra note 220. See also Telephone Interview with Mike Milinkovich, the Executive Director of the Eclipse Foundation (Jun. 26, 2007) (stating that with the formal organization, the Eclipse Foundation has gained brand recognition or name awareness) [hereinafter Interview with Milinkovich]; TPF, Perl Trademark, http://www.perlfoundation.org/perl_trademark (stating that “[b]y helping us protect the Perl Trademark, you help us protect the openness and integrity of the Perl Language”). Lawrence Rosen recognizes that trademark has crucial value in F/OSS projects and can be owned by individuals or by for-profit firms. See ROSEN, OPEN SOURCE LICENSING 37-38, 92-93.

[W]e didn’t want to see companies come up with something like Apache Plus, or Pro Apache, or use our name in other commercial products…so by creating a legal entity, it would at least dissuade companies from doing that, even if we didn’t have the resources to chase everything down. At the very least, I could credibly say, ‘Here’s an organization that will pursue if there is an issue.’

b. Legal Entity for Transactions

Moreover, NPOs provide a formal legal entity for peer-production communities to transact with other parties. From IBM’s perspective, Vice President and Assistant General Counsel Kappos explains the importance of ASF’s incorporation:

What is an advantage though from our perspective and I think that of any company about having the Apache Foundation be incorporated is that you can agree with it more effectively. Think about, for instance, things that support project with any kind of agreement in place. Here in the U.S., an agreement between parties is almost always reduced to writing and then it signed. And, of course, somebody got to sign on behalf of the legal entity. So we have people who are authorized to sign those agreements on behalf of IBM, people like myself. The problem is if we are agreeing with some other entity that doesn’t exist legally, they’ve got nobody you can sign an agreement on behalf of them. So you probably have a mismatched between the Western legal system that has a heritage of written contractual arrangement between either private parties or individuals or groups of individuals that have a formal legal recognition or corporation. They’re all formal legal recognition. If you try entering an agreement and you’re not one of those things, you have a natural problem on your hands. It’s kind of like a bandwidth mismatch. So it’s for that reason that we think it’s good that Apache has incorporate. On the other hand, if you look at some entities that haven’t incorporated, it continues to be difficult to enter into any kind of relationship with them.

216 Telephone Interview with Brian Behlendorf, co-founder and former President, ASF; Board member, Mozilla Foundation (June 19, 2008) [hereinafter Interview with Behlenforf].
because there’s nobody to sign on their behalf. They don’t really exist in any legal sense.\textsuperscript{217}

Therefore, from a transactional perspective, the organizational formality provided by an NPO can give other entities the assurance they require to establish long-term legal relations with the communities. The formal organizations then in return help the communities better manage their legal relations with the outside world.

\textbf{c. Protection from Individual Liability}

Another important function of NPOs in the F/OSS arena is to protect contributors from individual liability.\textsuperscript{218} According to Behlendorf, protecting individual contributors from potential liabilities is one of the primary reasons for the ASF’s incorporation. As Behlendorf said in an interview,

\begin{quote}
[I]f we had implemented the feature that somebody else had a patent on that even if we didn’t know about it, [and] if the person with the patent chose to make a claim,… something like $10 per copy distributed,…that would be a big problem. And it would be a problem for us as individuals, because we would all be personally liable and just to respond to any claims would cost us all hundreds of thousands of dollars, if not more. So one of the rationales for creating a legal entity of some sort was to act something as a shield, so that the legal entities assumed the risk, and could amass resources to fight if that challenge might arise… The reality is that in a Foundation we have about a quarter million dollars in the bank accumulated through various donations… it’s money that is being saved up for a rainy day, if we ever do have to fight a patent battle or if something else happens.\textsuperscript{219}
\end{quote}

\textsuperscript{217} Telephone Interview with David J. Kappos, Vice President and Assistant General Counsel, IBM (Mar. 25, 2008) [hereinafter Interview with Kappos].

\textsuperscript{218} See e.g. ASF, infra note 336; FONTANA ET. AL., LEGAL ISSUES PRIMER, supra note 214, at 13. See also LOHMANN, COMMONS, supra note 140, at 65 (“[i]n the United States, ongoing associations of all types tend to be incorporated because of…limits on participants liability offered by incorporation); WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 111 (stating that the incorporation of ASF is “in part to enhance itself with a legal infrastructure that could manage patent and liability concerns”).

\textsuperscript{219} Interview with Behlendorf, supra note 216. See also Catherine L. Fisk, Credit Where It’s Due: The Law and Norms of Attribution, 95 GEO. L.J. 49, 91 (2006) (describing how ASF bear potential liabilities
Allison Randal, member of the Board of Directors and former President of The Perl Foundation (TPF), stated how an F/OSS NPO helps to protect contributors from potential liability:

[Protecting contributors from potential liabilities is] one of the goals of the contributors licensing agreement. The biggest way is by acting as an obvious target for litigation. If you put forward the Perl Foundation as the legal entity behind Perl, then anyone who would try to attack contributors would first go to the Perl Foundation, instead of speaking out individual contributors.  

Sullivan of the FSF similarly explained the benefit of having an organization protect contributors from potential liabilities:

By having that institutional process set up we’re able to make it easy for people to contribute without worrying about legal risks. As a formal organization with legal services and money in the bank, we’re able to help be a steward of that software for those individuals.

The emergence of the Software Freedom Conservancy illustrates such benefits provided by a formal legal structure. The Software Freedom Conservancy is an NPO, which provides an alternative to independent corporate formation for F/OSS projects. By joining the Conservancy, F/OSS projects can receive the benefits of a hosting NPO, such as protection from personal liability, receiving tax-deductible

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for individual contributors); Van Wendel de Joode et al., Protecting the Virtual Commons, supra note 183, at 82-83 (“ASF serves the developers...by protecting them against possible lawsuits from companies...the ASF provides the developers with insurance against legal action by companies and against patent infringement”).

220 Telephone Interview with Allison Randal, Member of the Board and former President, Perl Foundation (Jul. 30, 2007).
221 Interview with Sullivan, supra note 207.
223 What the Conservancy provides to member projects is its organizational formality, which can shield individual developers from potential liability. See Software Freedom Conservancy, Mercurial Joins
donations, and having the Conversancy hold and manage assets for the communities.224

d. Collective Decision-making

Allocating community resources is also an issue for F/OSS communities. An NPO can assist in formalizing the resource allocation process for the community. For example, TPF has a Grants Committee to ensure that the grant funding is allocated and used efficiently.225 Furthermore, many nonprofit foundations maintain some formal mechanism to guarantee a sustainable community development process.226 In addition to hosting mailing lists and newsgroups or formalizing the code development process,227 some organizations, such as the ASF, form committees to solve the coordination problems by voting or a consensus process.228 Each Apache project has a Project Management Committee (PMC), appointed by the Board, to manage the development process.229 The main role of the PMC is to ensure that the legal requirements of the code-releasing process are met and that there is wide participation from the whole community.230 As ASF’s co-founder Behlendorf explained:

We felt that we could standardize the development processes, or even at least try to define them in a way

224 Software Freedom Conservancy, supra note 222.
226 Of course, informal coordination mechanisms, such as individual or group leadership and social norms, are also very important for F/OSS communities. See FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, at 91, 95-97; Kieff, Coordination, Property, and Intellectual Property, supra note 131, at 355-59; Lerner & Tirole, Economics of Open Source, supra note 137, at 222.
227 See e.g. Interview with Milinkovich, supra note 214; the Eclipse Foundation, About the Eclipse Foundation: Development Community Support, http://www.eclipse.org/org/#IP%20Management (last visited May 26, 2009); TPF, supra note 225.
228 Lerner & Tirole, Economics of Open Source, supra note 137, at 223; WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 92, 110, 186-87.
229 See ASF, supra note 336.
230 Id.
that could make it be templatized and applied to other projects. And so, I don’t know how exactly successful we were at that, but we set every initiative up as a project within the Foundation.\textsuperscript{231}

Similarly, TPF has several committees (the Steering Committee, the Grants Committee, and the Conference Committee) to coordinate its development process and deal with its day-to-day business.\textsuperscript{232}

\textbf{e. Standard Setting}

Some NPOs provide organizational support for F/OSS through standard-setting efforts. For example, the Linux Foundation “offers application developers standardization services and support that make Linux an attractive target for their development efforts.”\textsuperscript{233} Such standards are crucial to any operating system, since they can make applications interoperable with the subject system and, thus, help to accelerate their adoption.\textsuperscript{234} However, standard setting is a complicated task involving the definition of code specifications.\textsuperscript{235} Therefore, NPOs, such as the Linux Foundation, help to facilitate F/OSS development and distribution through their coordinated standard-setting process.

Besides platforms in the F/OSS world, there are other NPOs hosting platforms that facilitate online collaborative creation of the commons. For example, the Wikimedia Foundation supports the Wikipedia project,\textsuperscript{236} an extensive online

\textsuperscript{231} Interview with Behlendorf, supra note 216.
\textsuperscript{232} TPF, supra note 225.
\textsuperscript{233} The Linux Foundation, supra note 195.
\textsuperscript{234} For example, Microsoft has successfully made application-programming interfaces (APIs) an industry standard so that various applications can be built on the Windows system. See e.g. Jyh-An Lee, \textit{New Perspectives on Public Goods Production: Policy Implications of Open Source Software}, 9 VAND. J. ENT. & TECH. L. 45, 87 (2006).
\textsuperscript{235} Interview with Zimlin, supra note 214.
encyclopedia written and amended by any user who wants to participate.\textsuperscript{237} This project runs on an F/OSS collaborative-authorship tool, Wiki, which is a markup language similar in concept to HTML, but which is relatively easier to implement, enabling participants to edit a single document, to link multiple documents, and to generate archives of the changes made to each.\textsuperscript{238} Although volunteers are involved in much of the administrative work, the Wikimedia Foundation still needs to administer web pages and to resolve conflicts in the community.\textsuperscript{239} The ccMixter run by CC, on the other hand, is an online platform for individuals to upload music tracks, which other participants can use for their remix.\textsuperscript{240} Furthermore, the Project Gutenberg Literary Archive Foundation (Project Gutenberg Foundation) also provides individuals with a platform on which volunteers can collaboratively scan and proofread public domain books.\textsuperscript{241}

3. Legal Support

Individuals and organizations participating in commons production, distribution, or consumption face a number of legal uncertainties, which may ultimately hinder distributed creative activities.\textsuperscript{242} As a result, some NPOs have devised mechanisms to provide legal support to reduce legal risks facing participants in the commons settings.

\textsuperscript{238} See e.g. SHIRKY, HERE COMES EVERYBODY, supra note 72, at 111-12; SUNSTEIN, INFOTOPIA, supra note 56, at 148-50; Quiggin & Hunter, Money Ruins Everything, supra note 62, at 237; ZITTRAIN, FUTURE OF THE INTERNET, supra note 151, at 97-98, 133.
\textsuperscript{239} TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 72-73; ZITTRAIN, FUTURE OF THE INTERNET, supra note 151, at 135-36.
\textsuperscript{240} See ccmixter.org (last visited May 26, 2009); BOYLE, PUBLIC DOMAIN, supra note 2, at 180.
\textsuperscript{241} See Project Gutenberg Literary Archive Foundation, supra note 300. For a more detailed description of the Project, see Benkler, Coase’s Penguin, supra note 31, at 398-99; LESSIG, REMIX, supra note 76, at 166-67.
\textsuperscript{242} See e.g. LASSICA, DARKNET, supra note 74, at 119 (stating that certain culture creativity does not occur because of the fear of law suits).
Such support is most common in the F/OSS world in the aftermath of a series of suits brought by the SCO Group (SCO).\textsuperscript{243} For example, OSDL, one of the predecessors of the Linux Foundation, sponsored the Linux Legal Defense Fund to defray the legal expenses of Linux users and some key developers in legal suits brought by the SCO group.\textsuperscript{244} Moreover, the Linux Foundation has initiated two projects to protect contributors from potential patent infringement liability: the \textit{Open Source as Prior Art Project} and the \textit{Patent Commons Project}.\textsuperscript{245} The Open Source as Prior Art Project is a joint effort among the USPTO and several IT companies behind the Linux Foundation, which aims to provide F/OSS available as prior art for the USPTO to use in examining software patent applications, reducing the number of controversial software patents.\textsuperscript{246} The Patent Commons Project is designed to build a library that aggregates patent pledges to benefit F/OSS development.\textsuperscript{247}

The Software Freedom Law Center (SFLC) is probably the most representative NPO that provides legal support for F/OSS development. SFLC was founded in 2005 to supply pro-bono legal services to protect and advance F/OSS development.\textsuperscript{248} The organization provides legal representation for both individuals and other NPOs that participate in the F/OSS development.\textsuperscript{249} It assists the represented parties in enforcing

\begin{itemize}
\item \textsuperscript{243} SCO sued some Linux vendors and users under IP claims regarding to their use of the Linux systems. SCO claimed that Linux systems had misappropriated the Unix code owned by SCO. See Lee, \textit{supra} note 234, at 108.
\item \textsuperscript{244} The Linux Foundation, \textit{Linux Legal Defense Fund}, http://old.linux-foundation.org/about_osdl/legal/lldf (last visited May 26, 2009).
\item \textsuperscript{245} The Linux Foundation, \textit{supra} note 195; see also Interview with Zimlin, \textit{supra} note 214 (stating that the Linux Foundation “protect[s] the platform… [It] provide[s] legal funds for the platform.”)
\item \textsuperscript{246} See Open Source as Prior Art, \textit{Overview}, http://www.osapa.org/information.html (last visited May 26, 2009).
\item \textsuperscript{248} SFLC, \textit{Services}, http://www.softwarefreedom.org/services/ (last visited May 26, 2009).
\item \textsuperscript{249} Id.
\end{itemize}
Copyrights in both the United States and other jurisdictions. Moreover, it also offers licensing assistance and NPO formation for F/OSS communities. The public goods provided by SFLC are not only the legal support but also, more importantly, the legal certainties among F/OSS developers.

Beyond the F/OSS world, several NPOs have endeavored to protect the commons through litigation. Stanford University’s Center for Internet and Society has challenged the constitutionality of the Copyright Renewal Act and the Copyright Term Extension Act (CTEA). The Center’s Fair Use Project has aimed to protect individual creators’ fair use right in a series of lawsuits. The Electronic Frontier Foundation (EFF) is dedicated to fighting for individual freedoms in the digital economy as well. In the context of copyright rights, the EFF has been involved in milestone lawsuits such as MGM v. Grokster, Online Policy Group v. Diebold Inc., Kelly v. Arriba Soft Corp., and Lenz v. Universal Music Corp. Cindy Cohn, the Legal Director of the EFF, used MGM v. Grokster as an example to illustrate EFF’s role in the commons movement:

The idea that we were protecting [in MGM v. Grokster] was that in order to have a robust commons, people have to be able to make the tools that let all the rest of us

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250 Id.
251 Id.
252 Peter Galli, Center Will Provide Services, eWEEK, Feb. 7, 2005, at 32.
253 Kahle v. Gonzales, 474 F.3d 665 (9th Cir. 2007).
255 EFF, About EFF, at http://www.eff.org/about/ (last visited May 26, 2009).
256 For all the IP cases that EFF has been involved in, see EFF, Intellectual Property, http://www.eff.org/issues/intellectual-property (last visited May 26, 2009).
257 545 U.S. 913.
259 336 F.3d 811 (9th Cir. 2003).
260 No. 07-3783JF (N.D. Cal. filed July 24, 2007).
enjoy the commons. The question and issue in MGM v. Grokster was whether you could declare a technology illegal because people were using it to violate the copyright law. While we didn’t win the case, we did save the principle. The goal of the content industry was to get a ruling that said that if people use your product to infringe, they could get your product declared illegal. That suggestion was strongly rejected by the Supreme Court even though the Court did find that if you intentionally induce people to infringe, you could be liable for that infringement, and remanded it back to the lower court of the question of whether our client had infringed. The principle at stake was one that I think is pretty core to the idea of the commons movement and we did vindicate that principle in the lawsuit.261

The result of this litigation is certainly a public good for consumers of intellectual commons. If, through litigation, NPOs successfully sustain the freedom to consume commons, all consumers will benefit from the results without fear of infringing.262

4. Political Advocacy

NPOs have played an active role in the policymaking process in many areas of the United States.263 They educate the public and policymakers in a broad range of issues and their policy implications.264 This information function is especially important given the “political blindness to the importance of the public domain as a whole.”265 As a result of the aforementioned second enclosure movement, many public-interest advocates worry that the expanding IP laws may damage the existing

261 Interview with Cindy Cohn, Legal director, Electronic Frontier Foundation, in San Francisco, Cal. (Mar. 11, 2008) [hereinafter Interview with Cohn].
263 Hall, supra note 146, at 53.
264 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 30.
265 BOYLE, PUBLIC DOMAIN, supra note 2, at 241.
commons environment. Some of these advocates have formed NPOs in order to influence legislation through lobbying activities.

For example, Public Knowledge (PK) is an NPO that aims to protect intellectual commons by “monitor[ing] Congress, U.S. Agencies, State Legislatures and International Bodies for any proposed legislation that relates to intellectual property or technology policy.” 266 It participates actively “in the debate about proposed legislation” and discusses its position with “key policymakers, the press [and] industry.” 267 PK has primarily focused on preventing “harmful legislation from passing” in last few years. 268 Its co-founder and President Gigi B. Sohn stated in an interview that

We have probably stopped a half a dozen proposed laws that strengthen…the penalties for copyright infringement. [For example,] we stopped the legislation that would have a mandated the broadcast flag, which is a technology mandate.269

PK is also involved in international World Intellectual Property Organization (WIPO) meetings to influence legislation on an international level. Sohn described such efforts as “domestic approach to international policy”:

Our main thing is to try to inform U.S. policymakers about what the U.S. government is advocating overseas. For instance, [for] the WIPO Broadcast Treaty, we basically blew the whistle on the US delegation. We told members of Congress that the US delegation was advocating a position that was inconsistent with U.S. law. We go to WIPO and we participate in the overseas activities…we try to influence policymakers here to

267 Id.
268 Id.
269 Telephone Interview with Gigi B. Sohn, Co-founder and President, Public Knowledge (Mar. 4, 2008) [hereinafter Interview with Sohn].
make sure that the U.S. delegation does and says the right thing overseas.\(^{270}\)

Other NPOs involved in international IP legislation include EFF, Knowledge Ecology International (KEI), and Open Society Institute. As a permanent member of the WIPO,\(^{271}\) the EFF aims to promote developing countries’ access to knowledge in the international IP system.\(^{272}\) The Open Society Institute has been advocating for users’ rights in WIPO’s discussion of copyright limitations and exceptions and the Broadcasting Treaty.\(^{273}\) The KEI has likely made extensive efforts to influence WIPO’s treaties involving access to knowledge.\(^{274}\) These treaties include the WIPO Copyright Treaty in 1996 and the proposed Database Treaty, Broadcasting Treaty, and Treaty on Access to Knowledge.\(^{275}\) According to its founder and Director James Love, we’re trying to get the World Intellectual Property Organization to change its fundamental mission and to be more responsive to consumer interest, innovation, and the development interest of developing countries. We’re looking at the mission-setting activities. And we’re both trying to stop bad things and to support new initiatives.\(^{276}\)

Although lobbies may produce a public bad for society,\(^{277}\) the potential benefits that result from lobbying constitute a public good that every individual in the society

\(^{270}\) Id.
\(^{273}\) Telephone Interview with Vera Franz, Program Manager, Information Program, Open Society Institute (July 29, 2008) [hereinafter Interview with Franz].
\(^{274}\) Telephone Interview with Manon Ress, Director of Information Society Projects, KEI (Mar. 6, 2008) [hereinafter Interview with Ress].
\(^{275}\) Telephone Interview with James Love, founder and Director, KEI (Mar. 6, 2008) [hereinafter Interview with Love].
\(^{276}\) Id.
\(^{277}\) See Sandler, Collective Action, supra note 26, at 124 (suggesting trade-protectionist lobbies create a public bad); see also Douglas, Political Theories, supra note 122, at 52 (indicating that
automatically enjoys. In this sense, it is possible that PK and the EFF engage in lobbying activities whose public goods spill over into the entire society. However, the well-established copyright industry has also been intensely involved in copyright lobbying, which aims to further strengthen current copyright protection. Since such lobbying has been supported by a well-organized and financially resourceful proprietary industry, it is not easy for the NPOs, such as Public Knowledge and EFF, to fully achieve their goal through similar lobbying activities.

5. Information Access and Repositories

One may not have access to a commons owing to physical confines. In order to make more people benefit from the commons, some NPOs have provided access and repositories of these resources. For example, the Public Library of Science (PLoS) is an NPO dedicated to “making the world’s scientific and medical literature freely accessible.” It publishes both online and physical academic journals, whose articles all appear under a CC license that allows unrestricted reproduction, distribution, and modification in any medium, provided that the original work is properly cited. In 2003, it launched a series of open-access journals beginning with PLoS Biology. All of the articles published in PLoS journals are immediately available

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279 LESSIG, FREE CULTURE, supra note 3, at 52, 196-97, 218.
280 Id.
281 Id. at 213-14. It is estimated that in the United States, only 20,000 out of 16 million books in the public domain are digitalized for public access. See LASICA, DARKNET, supra note 74, at 40.
online without charge. The PLoS pursues these ends because it believes that “Open Access publishing…leads to wider dissemination of information and increased efficiency in science, by providing open access to ideas…[and]…open access to the broadest audience.”\(^{284}\) To cover its expenses, the PLoS requires that authors pay from $1,250 to $2,500 for each piece that appears in the PLoS’s different journals.\(^{285}\)

PLoS is certainly not the only NPO involved in open access academic publishing. Universities, a unique type of NPO, have historically been viewed as important social institutions that produce and disseminate knowledge. They have also begun to provide access to their researchers’ publications.\(^{286}\) For instance, the University of California has planned to initiate an open-access academic journal.\(^{287}\) Moreover, many other reputable universities have adopted DSpace, a repository software platform, to provide free access to their faculty’s publications.\(^{288}\) Another interesting example of the access provided by universities to knowledge is the Massachusetts Institute of Technology (MIT)’s OpenCourseWare (OCW). In September 2003, MIT launched its OCW initiative, which made the content of its

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\(^{285}\) PLoS Public Library of Science, *Publication Fees for PLoS Journals*, at http://www.plos.org/journals/pubfees.html (last visited May 26, 2009). Nonetheless, publication fees may may be completely or partially waived if authors do not have adequate funds to cover the expenses. *Id.*

\(^{286}\) Ostrom & Hess, *Knowledge Commons*, supra note 35, at 56-56. At the same time, universities are also enclosing commons through the increasing number of IP rights they own. Hess & Ostrom, *supra* note 35, at 10.


\(^{288}\) *Id*; Ostrom & Hess, *Knowledge Commons*, supra note 35, at 56.
course materials freely available online.\textsuperscript{289} MIT aims to publish all undergraduate and graduate courses by 2008.\textsuperscript{290} All the OCW materials are licensed under CC Attribution-Noncommercial-ShareAlike 2.5 licenses.\textsuperscript{291} After MIT initiated the OCW project, Rice University, the University of Notre Dame, Yale University, and University of California, Berkeley also decide to make their educational materials freely available online.\textsuperscript{292}

Other universities have also begun to provide access to information digitally, which was not available before the Internet era. For example, the University of Michigan has built the Internet Public Library (IPL),\textsuperscript{293} which provides 20,000 books in full-text, a collection of links categorized by various topics, and reference service at no charge.\textsuperscript{294} The IPL enables users to freely reproduce its pages and resources in print sources for non-commercial use, provided the users comply with specific conditions, such as appropriate citation and informing the IPL.\textsuperscript{295} Tufts University is running the Perseus Digital Library project that collects texts and images pertaining to the Archaic and Classical Greek world, late Republican and early Imperial Rome, the English Renaissance, and nineteenth-century London.\textsuperscript{296} The Perseus Digital Library allows

\textsuperscript{289} See MIT, MIT OpenCourseWare, at http://ocw.mit.edu/OcwWeb/index.htm.
\textsuperscript{292} Michael W. Carroll, Creative Commons and the New Intermediaries, 2006 MICH. ST. L. REV. 45, 57-59 (2006); Anne Marie Chaker, Yale on $0 a Day: Top Universities Post Lectures and Other Course Materials On Web, Free and Open to All; Literature of Crisis on Your iPod, WALL ST. J., Feb. 17, 2007, at D1.
\textsuperscript{293} The Internet Public Library, at http://www.ipl.org/.
\textsuperscript{294} IPL, Introduction to the IPL, at http://www.ipl.org/div/about/tours/IPLTourIntroText.html (last visited May 26, 2009).
\textsuperscript{296} Perseus Digital Library, at http://www.perseus.tufts.edu/.
online users to freely search for and read information about specific people, places, and dates in its digital collections.297

Several NPOs treat information as a public good by making it available to the public. For instance, the online library—Internet Archive—provides the public with open and free access to text, audio, images, software, and archived web pages in its collections.298 It operates Web crawlers—programs that index information stored on the Internet—and offers Wayback Machine, which allow surfers to find previous versions of Websites.299 Similarly, Project Gutenberg, hosted by the Project Gutenberg Foundation, has provided the public with free online access to a large number of public domain books.300 The Television Archive has been building a television library, “with the purpose of offering permanent access for researchers, historians, and scholars to historical collections that exist in digital format.”301 It is worthwhile to note that by archiving a variety of digital information, these organizations have preserved important social memory.302

All the NPOs described in this section not only provide access to information, but also function as open repositories of information. They function as online public libraries for society. Nonetheless, they are technically different from traditional public libraries in the physical world. The books in traditional libraries are CPRs, which are

297 Id.
298 Internet Archive, About the Internet Archive, at http://www.archive.org/about/about.php (last visited May 26, 2009).
Moreover, much of the information provided by these books is proprietary. You cannot reproduce, prepare derivative works, or distribute copies of these books without permission before the underlying copyrights expires. In contrast, the information provided by NPOs described in this section is non-rivalrous. This unique characteristic is especially effective in fostering a participatory read-and-write culture in the networked environment.

6. Public-interest Grant-making

Grant-making foundations are legally distinct from other NPOs in the sense that the latter have to “[spend] 85 percent of its income on the active conduct of its charitable program.” In contrast, grant-making foundations usually endeavor to improve social, economic, or political life through funding for other intermediary organizations. In other words, grant-making foundations do not provide public goods directly to the society. The financial support provided by these foundations can be regarded as a private good with positive externalities. These grants can often be more than just cash transfers. They are often affirmation of beliefs that accomplish public purposes while providing grant makers with the satisfaction of seeing their values put into action. Therefore, some researchers claim that “[p]hilanthropy

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305 John Simon et al., *supra* note 107, at 269.
306 Hall, *supra* note 146, at 47.
is...about donors’ using their funds to explore their own private vision of the public good.”

Grant-making foundations have played a critical role supporting various social movements in the United States. A number of these organizations have also provided indispensable funding for NPOs in the commons discourse. For example, OER program of the William and Flora Hewlett Foundation (Hewlett Foundation) had invested $68 million from 2002 to 2006 to stimulate the OER movement, which included $43 million for “creation and dissemination of open content,” and $25 million for “reducing barriers, understanding, and/or stimulating use.” The Foundation’s grantees have included CC, Internet Archive, MIT OCW, and other academic institutions opening up their educational resources online. The Foundation requires all products from its grants to be licensed under a CC license.

The John D. and Catherine T. MacArthur Foundation (MacArthur Foundation) has advocated the protection of the public domain and has provided grants to some of the aforementioned NPOs, such as CC, EFF, PK, and PLoS. It also sponsored research or policy analysis focused on the public domain. The aim of the MacArthur Foundation’s general program is “to contribute to an intellectual property regime in the digital era that balances the legitimate needs of both creators and the

309 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 105.
310 Prewitt, supra note 143, at 372-73.
311 Kapczynski, Access to Knowledge, supra note 78, at 841, note 174. Generally, grant-making foundations direct most of their funds to other NPOs. Prewitt, supra note 143, at 356-57.
312 See ATKINS ET AL., supra note 100, at 7.
314 Interview with Catherine M. Casserly, Program Officer of Education Program, William and Flora Hewlett Foundation, in Menlo Park, Cal. (Oct. 5, 2007).
316 Id.
public...[and to] support work designed to protect—over the long term—the public domain of information and ideas.”

Open Society Institute, affiliated with the Open Society Foundation, has provided grants for reform of the international IP regimes and open knowledge production activities. The Open Society Institute provides funding to Wikimedia Foundation’s annual Wikimania conference, CC branches in a number of countries, and sponsors a series of research activities and conferences on access to knowledge. Other grant-making NPOs in the commons environment include the Center for Public Domain, the Rockefeller Foundation, and the Andrew W. Mellon Foundation. Through various grant-making activities, these organizations have provided indispensable financial resources for the commons movement.

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321 Id.
322 The Foundation supports the development of technologies that can benefit multiple institutions. It has funded MIT’s OCW and PKI (an open source public infrastructure).
CHAPTER 4  CURRENT NPO THEORIES AND THEIR APPLICATIONS

The heterogeneous nature of the nonprofit sector has greatly complicated the work of theorists who seek to model the origins and the behavior of NPOs. In this Section, I introduce two principal NPO theories—\(^{323}\) the contract failure theory and the government and market failure theory—both of which suggest that NPOs are a private response to certain failures in society. These theories highlight NPOs’ social value, which rests on their particular failure-correcting devices.

By applying both theories to the commons context, I will test their strengths and weaknesses. Although I seek to expose some gaps in both theories, I do not reject their central insights, which are necessary tools to understand NPOs’ role in the commons discourse.

A. Contract Failure Theory

1. Theory

The “contract failure theory,” first proposed by Professor Henry Hansmann, is built around the central concept that the monitoring that occurs naturally in a normal market, in which buyers pay when the suppliers perform acceptably, cannot discipline

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323 See e.g. FRUMKIN, ON BEING NONPROFIT, supra note 102, at 70 (identifying these two theories as two “most prominent theories). Certainly, there have been some other NPO theories developed by some other prominent scholars. See e.g. BRIAN E. DOLLERY & JOE L. WALLIS, THE POLITICAL ECONOMY OF THE VOLUNTARY SECTOR: A REAPPRAISAL OF THE COMPARATIVE INSTITUTIONAL ADVANTAGE OF VOLUNTARY ORGANISATIONS 9, 9 (2003) (outlining various NPO theories, such as supply-side theory, welfare state theory, interdependence theory, and social origins theory); FRUMKIN, ON BEING NONPROFIT, supra note 102, at 72-78 (introducing Lester Salamon’s voluntary failure theory). However, for the purpose of this research, I chose the two dominant theories that are the most relevant to the NPOs studied in this Dissertation.
the supplier of certain goods or services.\footnote{Brian E. Dollery & Joe L. Wallis, The Political Economy of the Voluntary Sector: A Reappraisal of the Comparative Institutional Advantage of Voluntary Organisations 9, 14-15 (2003).} As a result, when consumers are under-informed in relation to the suppliers, the proprietary sector tends to perform badly. In other words, the basic hypothesis of contract failure theory is that poorly-informed consumers are unlikely to find proprietary firms supplying higher quality when low quality can be sold at the same price. Contract failure, which is a particular type of market failure, occurs in venues in which services are difficult to evaluate.\footnote{Hansmann, \textit{Nonprofit Enterprise}, supra note 103, at 844-45.}

Professor Hansmann uses charity as an example to articulate the essence of contract failure theory.\footnote{Id. at 846-48; Hansmann, \textit{Reforming Nonprofit Corporation Law}, supra note 10, at 505-07.} He believes that NPOs function as a trusted channel when donors of specific services or goods and the corresponding recipients have no connections with each other.\footnote{Hansmann, \textit{Nonprofit Enterprise}, supra note 103, at 846-48.} The non-distribution constraint of NPOs can assure donors that their contribution, in fact, meets the costs of the organizations’ production.\footnote{Hansmann, \textit{Reforming Nonprofit Corporation Law}, supra note 10, at 505. Of course, whether NPOs can fulfill their duty efficiently is another issue. I thank Professor Mark A. Lemley for reminding me of this point.} Conversely, a for-profit firm has both the opportunity and the incentive to exploit the customer in such a circumstance.\footnote{Hansmann, \textit{Nonprofit Enterprise}, supra note 10, at 843-44, 850; Hansmann, \textit{Reforming Nonprofit Corporation Law}, supra note 10, at 505. \textit{See also} Weisbrot, \textit{Nonprofit Economy}, supra note 103, at 30 (noting that the “informational handicap” resulted from proprietary firms’ nature may reduce donors’ willingness to deal with these organizations).}

Therefore, NPOs seem necessary when there is this kind of contract failure—where the donor cannot directly contact the intended beneficiary of the gift.\footnote{Hansmann, \textit{Nonprofit Enterprise}, supra note 103, at 846-48. \textit{But see} Steve E. Permut, \textit{Consumer Perceptions of Nonprofit Enterprise}, 90 \textit{Yale L.J.} 1623 (1981) (arguing that the non-distribution constraint does not significantly increase consumer confidence in the trustworthiness of NPOs).} In circumstances where contributors know the quality of the tendered service, contract failures still occur when contributors have little assurance about whether their payment...
will be appropriately used on the service they receive. An NPO form may, therefore, inspire greater trust.

In sum, according to contract failure theory, “contract failure is the essential factor in the role of nonprofit enterprise.” NPOs’ non-distribution constraint solves the problems of market failure stemming from the information asymmetry between the parties involved in the transaction. Therefore, NPOs offer the purchasers a degree of assurance that the goods or services being purchased meet adequate standards of quality and quantity.

2. Applications

It may be the case that contract failure theory satisfactorily explains public-interest grant-making NPOs. Donors trust that NPOs, as opposed to for-profit firms, will make use of the donors’ monetary donations according to the organizations’ mission statements. Some philanthropists use the NPO as a tool to fulfill their charitable projects. In the commons environment, there are also some grant-making foundations, such as the aforementioned Hewlett Foundation, the MacArthur Foundation, and the Open Society Institute. These foundations fulfill their public-interest function by channeling financial resources to other NPOs and entities in the

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332 Although Hansmann acknowledges that NPOs may distribute their earnings by overcompensating their employees to some extent, he asserts that, in some circumstances, the NPOs still cause fewer inefficiency-based losses than do their for-profit counterparts. *Id.* at 844-45. In the real world, agency costs rise when NPOs and their officials do not honestly follow their donors’ expectations. *See* PAUL MILGROM & JOHN ROBERTS, *ECONOMICS, ORGANIZATION, AND MANAGEMENT* 524 (1992) (describing scandals from NPOs, including the Red Cross, Christian evangelists’ PTL organization, the Covenant House, and Stanford University), *see also* Kevin E. Davis, *The Role of Nonprofits in the Production of Boilerplate*, 104 Mich. L. Rev. 1075, 1089 (2006) (describing the potential agency costs resulting from NPOs’ inability to hold theirs agents accountable); Steinberg, *Economic Theories*, supra note 103, at 126-27 (identifying a number of NPO-associated agency costs as “voluntary failure”).
commons environment. Such public-interest grant-making activities exemplify how, by bridging the donors and recipient NPOs, the grant-making NPOs alleviate contract failure.

The other typical application of contract failure in the commons environment concerns donations to F/OSS and other commons communities. In recent years, as part of their business strategy, large IT companies have begun to donate either money or code to F/OSS communities. Nevertheless, communities are not legal entities that can receive donations for their widely-dispersed participants. As a result, many NPOs function as legal actors that represent the commons communities by receiving—on the community’s behalf—donations from either individuals or businesses. Although there are alternatives to establishing a formal organization, the NPOs’ non-distribution constraint provides donors with certain assurances that the NPOs’ use


335 See e.g. Ascher, Python Software Foundation, supra note 161, at 5 (noting that without a legal entity, the Python community cannot have its own bank account).

336 For example, the ASF has made it clear that “the Foundation was formed primarily to...create an independent legal entity to which companies and individuals can donate resources...” ASF, Frequently Asked Questions—Why Was the Apache Software Foundation Created?, http://www.apache.org/foundation/faq.html (last visited May 26, 2009). The Mozilla Foundation also states that “[it] was incorporated...to enable contributions of intellectual property and funds...” The Mozilla Foundation, About the Mozilla Foundation, http://www.mozilla.org/foundation/ (last visited May 26, 2009). The history of the Python Software Foundation is also related to obtaining financial backing for Python development. Ascher, Python Software Foundation, supra note 161, at 5, 8. Beyond the F/OSS realm, the Wikimedia Foundation was incorporated to “enable people to give charitable donations to [the Wikipedia Project] more easily.” Interview with Michael Godwin, General Counsel, Wikipedia Foundation, in San Francisco, Calif. (Mar. 10, 2008) [hereinafter Interview with Godwin]. The Project Gutenberg Foundation was also established for the purpose of receiving donation. Telephone Interview with Greg Newby, CEO, Project Gutenberg Foundation (May 5, 2008).

337 O’Mahony, Nonprofit Foundations, supra note 111, at 396-97.
of the donated resources will not conflict with the public interest. Patrick O. Brown of the PLoS explained in an interview how the organization’s nonprofit status provide trust for its donors:

> [p]eople who want to donate money will certainly have greater confidence that there’s only one reason we’re doing this. It’s right there in our stated mission. It is never ever going to come in conflict with anything else, including our responsibility with our investors to make a profit. You can be sure that whatever we do with your money is going to be driven by this goal and nothing else.

Nonetheless, one distinction between the traditional contract failure scenario and commons peer production hinges on the type of donation that people make. In traditional contract failure theory, the type of donation, including money, food and other supplies, consists of private goods. Rivalrousness and exclusiveness characterize private goods. Although these private goods can be delivered and consumed physically, the delivery and the consumption of intellectual resources unfold in a unique way. Consequently, in the commons settings, new types of contract failure may occur in any of the following three scenarios. The first two are a result of physical obstacles between information donors and information recipients, whereas the third type results from legal constraints.

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338 For example, the ASF states that the donated resources “will be used for the public benefit.” ASF, supra note 336.
339 Interview with Patrick O. Brown, Co-founder and Board Member, Public Library of Science, in Stanford, Cal. (Apr. 29, 2008) [hereinafter Interview with Brown].
340 Hansmann, Nonprofit Enterprise, supra note 103, at 849-50.
341 Id. at 846.
a. Access Failure

Access to information\textsuperscript{342} has always been an important policy consideration in contemporary copyright law. The purpose of the IP system is to balance private incentives to engage in creative activity with the social benefits that arise from broad access to creative works.\textsuperscript{343} The tradeoff between “access” and “incentives” has been an important decision for IP policymakers.\textsuperscript{344} Nonetheless, with for-profit entities’ increasing control over information,\textsuperscript{345} the policy goal of public access to information has been difficult to achieve.\textsuperscript{346} Therefore, some commons movement proponents have asserted that since information has strong public goods characteristics, for-profit companies should not profit from the access to information.\textsuperscript{347}

When individual creators fail to provide ready access for consumers, access failure—a new type of contract failure—occurs in the market for information access. Access failure was first perceived in the market for academic journals. In recent years, although digital technologies have substantially decreased the cost of disseminating journal articles,\textsuperscript{348} the average cost of a journal subscription has increased

\textsuperscript{342} The definition of access to information may vary according to scenarios. The term may refer to Internet connectivity or to technology usability. See CHRISTINE L. BORGMAN, FROM GUTENBERG TO THE GLOBAL INFORMATION INFRASTRUCTURE: ACCESS TO INFORMATION IN THE NETWORKED WORLD 56-57 (2003). In this Dissertation, access to information means the way in which potential consumers can use intellectual resources.
\textsuperscript{343} See e.g. H.R. REP. NO. 60-2222, at 7 (1909); LANDES & POSNER, STRUCTURE OF INTELLECTUAL PROPERTY, supra note 38, at 11, 20-21; Glynn S. Lunney, Jr., Reexamining Copyright’s Incentive-Access Paradigm, 49 VAND. L. REV. 483, 485-86 (1996); Sunder, IP\textsuperscript{3}, supra note 79, at 280-81.
\textsuperscript{344} See e.g. LANDES & POSNER, STRUCTURE OF INTELLECTUAL PROPERTY, supra note 38, at 11, 22; Lunney, supra note 343, at 492-99.
\textsuperscript{345} As early as in the eighteenth century, British Parliament was concerned about commercial control over knowledge, which Parliament argued, should be free for society. See LESSIG, FREE CULTURE, supra note 3, at 88-90.
\textsuperscript{346} See text accompanying with notes 86-88.
\textsuperscript{347} Interview with Ahrash Bissell, Executive Director of ccLearn Project, Creative Commons, in San Francisco, Cal. (Oct. 22, 2007).
\textsuperscript{348} LESSIG, FREE CULTURE, supra note 3, at 280; see also HAROLD, OURSPACE, supra note 96, at 151-52 (noting that digital technologies has made sharing of information much easier).
significantly.\textsuperscript{349} The prices that users pay to access scholarly journal articles have drastically increased due to publishers’ adoption of digital technologies that restrict access to academic works.\textsuperscript{350} Publishers may charge by the number of users or by the number of article downloaded.\textsuperscript{351} It is estimated that the subscription fee for academic journals increased 220\% from 1986 to 2004.\textsuperscript{352} The prices of scientific, technical, and medical journals “rose more than 600\% between 1982 and 2002, with certain fields like chemistry increasing 752 percent.”\textsuperscript{353}

With strong copyright and market control, commercial publishers usually bundle journals in a license package.\textsuperscript{354} As a result, small libraries, institutions in developing countries,\textsuperscript{355} independent scholars, and the general public\textsuperscript{356} cannot afford the tremendous cost of these bundles. Such problems are probably most serious in scientific and medical research because journal subscriptions in such fields are usually very expensive, whereas access to the published articles is critically important for the advancement of research in progress.\textsuperscript{357} What is worse about the digitalization of


\textsuperscript{351} Armbruster, \textit{supra} note 350, at 27; Litman, \textit{Economics of Open Access}, \textit{supra} note 349, at 782.

\textsuperscript{352} See KRANICH, \textit{supra} note 137, at 18.


\textsuperscript{356} LESSIG, \textit{FREE CULTURE}, \textit{supra} note 3, at 281.

\textsuperscript{357} See Litman, \textit{Economics of Open Access}, \textit{supra} note 349, at 784.
journal articles is that centralized control may even have the power to remove them completely from circulation.\(^358\)

The access failure stemming from increasing journal-subscription fees may be detrimental to the advancement of human knowledge because the knowledge in a proprietary journal is not open enough to rigorous criticism.\(^359\) From their perspective as authors, scholars usually place much more importance on professional recognition than on pecuniary profit.\(^360\) Therefore, rather than choosing to earn substantial profits from copyright, most scholars prefer to have their works disseminated and cited as widely as possible.\(^361\) Furthermore, from their perspective as readers of academic articles, it is critically important for scholars to have access to others’ work because scholarly discussion is a continuous process based on previous research.\(^362\) A reader of an academic article is very possibly an author of another article. Accordingly, in academia, authors’ willingness to disseminate their works is usually consistent with

\(^{358}\) Hess & Ostrom, *supra* note 22, at 134. Cf. Harold, *OurSpace*, at 136-37 (noting that the centralized control granted by copyright over intellectual resources is dangerous).

\(^{359}\) Cf. Bollier, *Silent Theft*, *supra* note 5, at 183 (noting that the norm of the scientific community is transparency for critique); Lessig, *Free Culture*, *supra* note 3, at 279-80 (indicating that knowledge should be open to criticism in both software development and academia).


the public’s interest in free access to information.\textsuperscript{363} Such consistency indicates that the academic journal-market does not need copyright as an incentive for intellectual creation.

Nonetheless, in \textit{American Geophysical Union v. Texaco}, the court stated that copyright still plays an important role in the dissemination of scholarly research:

Copyright protection is vitally necessary to the dissemination of scientific articles of the sort that are at issue. This is not because the authors insist on being compensated.... But copyright protection is essential to finance the publications that distribute them. Circulation of such material is small, so that subscriptions must be sold at very high prices. If cheap photoduplications could be freely made and sold at a fraction of the subscription price, Catalysis would not sell many subscriptions; it could not sustain itself, and articles of this sort would simply not be published. And without publishers prepared to take the financial risk of publishing and disseminating such articles, there would be no reason for authors to write them; even if they did, the articles would fail to achieve distribution that promoted the progress of science.\textsuperscript{364}

In other words, the court argued that in the academic-journal market, copyright’s primary role is to induce professional publishers and printers to reproduce and distribute scholarly works, rather than authors to create scholarly works.\textsuperscript{365} Because authors usually do not attempt to profit directly from their published work, they would

\textsuperscript{363} Interview with Brown, supra note 339. See also LOHMANN, COMMONS, supra note 140, at 144-45, 150-51 (viewing academic journals as commons).

\textsuperscript{364} Am. Geophysical Union v. Texaco, Inc., 802 F. F. Supp. 1, 16 (S.D.N.Y. 1992), aff’d, 60 F.3d 913 (2d Cir. 1994).

\textsuperscript{365} Copyright’s role of providing incentive for distributors is also recognized in fields other than academic publications. See e.g. BOYLE, PUBLIC DOMAIN, supra note 2, at 195-96; Quiggin & Hunter, \textit{Money Ruins Everything}, supra note 62, at 244; Wu, \textit{Authorship Policy}, supra note 159, at 335-39.
rather cede the underlying copyright to commercial publishers in exchange for publishing and distributing their works.\footnote{Litman, The Economics of Open Access Publishing, at 782; cf. Dan Hunter, Open Access to Infinite Content (Or “In Praise of Law Reviews”), 10 Lewis & Clark L. Rev. 761, 768-68 (noting that copyright and commercial intermediaries are necessary for distributing to society various media, such as books, movies, and music). Copyright assignment from authors to distributors is also common in industries other than academic journal publishing. See Wu, Authorship Policy, supra note 159, at 336.}

However, behind this type of exchange lies a potential conflict that arises between the interests of authors and the interests of publishers,\footnote{Bramble, Preparing Academic Scholarship, at 216; Hunter, Walled Gardens, supra note 99, at 614; Ralph R. Shaw, Copyright and the Right to Credit, 113 Science 571, 572 (1951). Cf. Elkin-Koren, What Contracts Cannot Do, supra note 38, at 384 (describing similar exchanges between creators and publishers in the content industry); Wu, Authorship Policy, supra note 159, at 336, n4 (stating that copyright assignment to distributors is likely to “result in the loss of authorial copyright).} which leads to access failure in the academic-journal market. As noted previously, authors wish to distribute their works as widely as possible, whereas for-profit publishers do not have incentives to make journal articles cheaply available to all. These publishers, instead, prefer to strengthen and extend the copyright protection of information in order to maximize their profits.\footnote{See Kranich, supra note 137, at 18; see also Hunter, Walled Gardens, supra note 99 (noting “a pernicious problem in scholarly publishing—that of restricting access to ideas in order to make a profit”); Opderbeck, supra note 99, at 151 (claiming that IP “facilitate[s] a ‘blockbuster’ business model” in science, technology, and medical publishing market).} As a result, copyright has become a tool with which commercial publishers extract all potential commercial value from works of authorship.

In the midst of this mismatch between the interests of scholars and the interests of commercial publishers, the PLoS has adopted a new approach to the academic-journal publishing market. The PLoS provides scientists with an opportunity to take charge of their own IP and to bypass the market control of commercial publishers. Because the Internet has significantly decreased the costs of disseminating academic journals,\footnote{Armbruster, supra note 350, at 27; Hunter, Walled Gardens, supra note 99, at 618; Ostrom & Hess, Knowledge Commons, supra note 35, at 55.}
the copyright system is not the only mechanism on which we can rely to publish and distribute academic journals. In other words, with the Internet’s capacity to transmit information economically, it becomes problematical to justify commercial publishers’ control over the copyright of published papers. Using the case of the PLoS, the organization’s co-founder and board member Patrick O. Brown similarly expressed this suspicion regarding publishers’ appropriation of the copyright underlying academic papers:

[S]ince there’s a perfectly good business model for open access publication, which basically says that you don’t need to restrict who can distribute and the terms of distribution of articles, or anything like that at all, you can just have a financially viable model. So if you say the journal couldn’t sustain itself and articles would not be published, that’s not true.

In the interest of publishing quality academic journals, a formal organizational structure is desirable to cover various transaction costs required by a professional publication. Such costs include, for example, costs of running the server and administering the peer review, the editing, the layout, the typesetting processes, and the publication itself. Therefore, in order to simultaneously eliminate access failure

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370 Cf. Quiggin & Hunter, Money Ruins Everything, supra note 62, at 245 (“copyright is no longer the only mechanism for ensuring that content moves from the author into the society.”)

371 See e.g. Boyle, PUBLIC DOMAIN, supra note 2, at 187-98.

372 See Boyle, Mertonianism Unbound, supra note 35, at 135 (arguing that openness is the baseline for academy and scholarship, and any deviation requires justification). See also Lastowka, Digital Attribution, supra note 50, at 63 (“Network technologies now provide…means, allowing creators to respond to very old incentives.”); Quiggin & Hunter, Money Ruins Everything, supra note 62, at 215 (“digital technologies removes the need for highly capitalized intermediaries to guarantee the widespread dissemination of content”).

373 Interview with Brown, supra note 339.

374 See Ostrom & Hess, Knowledge Commons, supra note 35, at 65; Schweik, supra note 54, at 300. Cf. Litman, Economics of Open Access, supra note 349, at 793 (describing similar necessary costs borne by commercial scholarly journal publishers). See also Patrick O. Brown et. al. Why PLoS Became a Publisher, 1 PLOS BIOLOGY 1, 1 (2003) (stating that PLoS journals demand “high standards of quality and integrity, rigorous and fair peer-review, expert editorial oversight, high production standards, a distinctive identity, and independence.”)
and internalize transaction costs stemming from journal publication, the NPO emerges as an ideal organizational form for the PLoS.\textsuperscript{375} Through the Internet connection, the PLoS has successfully corrected the contract failure that has long existed between academic writers and academic readers.\textsuperscript{376}

The Wikimedia Foundation’s Wikipedia project has likewise corrected access failure in the encyclopedic world. Wikipedia provides readers with a free alternative to the once-dominant \textit{Encyclopedia Britannica}, which requires an arduous registration process and a monthly fee of $11.95.\textsuperscript{377} Although the content on Wikipedia is free of charge, the amount of information and self-correcting mechanisms are unparalleled.\textsuperscript{378} Furthermore, its quality is almost as good as that of Encyclopedia Britannica.\textsuperscript{379}

In the cultural industry, access failure similarly occurs when media companies completely control the intellectual resources through copyright. In \textit{Free Culture}, Lessig tells a story about the tremendous difficulties that the independent documentary

\textsuperscript{375} It should be noted that there are also commercial players involved in the “open-access” scholarly journal publishing. For example, BioMed Central (BMC) is a British scientific publisher specializing in open access publishing. Similar to the PLoS, BMC charges authors processing fees and provides people with free access to its journal articles. \textit{See} BMC, \textit{What is BioMed Central}, at http://www.biomedcentral.com/info/ (last visited May 26, 2009); BENKLER, \textit{WEALTH OF NETWORKS}, supra note 2, at 324. Prentice Hall, a commercial publisher, has also released some books under public licenses, allowing further reproduction and modification. Stephen Shankland, \textit{Book Publisher Adopts Open-source Idea}, CNet News, Jan. 17, 2003, at http://news.com.com/2100-1001-981018.html. Nonetheless, not all NPOs support the idea of open access publishing. Some nonprofit publishers, particularly scientific societies that finance their activities from the sale of their own scholarly journals, are opposed to open access publishing. See Lila Guterman, \textit{Scientific Societies’ Publishing Arms Unite Against Open-access Movement}, \textit{CHRON. HIGHER EDUC.}, Mar. 26, 2004, at 20.

\textsuperscript{376} \textit{See} Brown et al., supra note 374, at 1. It should be noted that academic institutions, such as universities, are another type of NPO that have identical interests to those of their scholars in making academic works freely accessible. Therefore, many of these institutions have begun to build online institutional repositories that archive their researchers’ works. \textit{See} supra text accompanying note 286-288; Ostrom & Hess, \textit{Knowledge Commons}, supra note 35, at 55-57. These institutional repositories can also correct some access failures.

\textsuperscript{377} TAPSCOTT & WILLIAMS, \textit{WIKINOMICS}, supra note 137, at 76.

\textsuperscript{378} \textit{Id.} at 75-76.

\textsuperscript{379} \textit{Id.} at 75.
filmmaker Jon Else faced in trying to use a 4.5-second cartoon clip in a scene. Although the cartoon creator, Matt Groening, granted Else the permission to use this clip, FOX, which claimed to own the copyright of that cartoon, asked for US$10,000 from Else. The claim successfully precluded Else from using the short clip in the documentary. Resembling the access failure in the academic-journal market, a failure resulting from for-profits’ proprietary control over information exists in the culture industry. To respond to such failures, NPOs such as the Internet Archive and the Television Archive provide a platform where creators are free to build upon existing creative work. By offering free access to abundant digital information and by decreasing the costs of clearing relevant IP rights, these organizations are fostering a wealth of creativity and alleviating contract failure between information creators and information users.

The story of MIT’s OCW and analogous initiatives by other universities are similar, but not identical, to the efforts to correct access failure by the Internet Archive and the Television Archive as described above. As many researchers illustrate, universities have been historically constructed as commons. Therefore, the OCW

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380 LESSIG, FREE CULTURE, supra note 3, at 95-99; see also Lessig, Re-crafting a Public Domain, supra note 5, at 61 (noting that news programs like ABC’s “Good Morning America” do not license any of their content for reuse).

381 LESSIG, FREE CULTURE, supra note 3, at 96.

382 See id at 95-107 (illustrating the high transaction costs stemming from clearing relevant IP rights in cultural-production activities). See also HELLER, GRIDLOCK ECONOMY, supra note 15, at 12-16 (describing the enormous costs of copyright clearance in producing film and music); LASSICA, DARKNET, supra note 74, at 71-72 (noting that most major studios do not allow home video makers to include a clip of their major films without paying thousand of dollars); Lessig, Creative Economies, supra note 130, at 38-39 (illustrating the huge transaction costs of clearing IP rights for the Internet Archive and music remixers); LESSIG, REMIX, supra note 76, at 9-15 (describing the enormous costs of clearing IP rights in two other cases).

383 See e.g. BOLLIER, SILENT THEFT, supra note 5, at 137-38; LOHMANN, COMMONS, supra note 140, at 106-07; Michael J. Madison et al., The University as Constructed Cultural Commons, (forthcoming WASH. U. J. L. & POL’Y, 2008), at Michael J. Madison et al., The University as Constructed Cultural
project was initiated not because of for-profits’ excessive power over information, but due to MIT’s response to an institutional question of what the institution stands for in the Internet era. MIT recognizes that OCW is an effective way to fulfill the institution’s core mission—to advance knowledge, to educate, and to serve the nation and the world\textsuperscript{384}—which is usually not the primary goal of proprietary firms. As an NPO dedicated to education and research, MIT is aware that proprietary firms cannot assume its role in generating, producing, and disseminating knowledge. By providing the public with free access to high-quality materials, MIT has successfully corrected the contract failures between its scholars and those who have little or no access to sufficient high-quality educational materials, such as scholars in the developing world and researchers in rural areas of the United States.\textsuperscript{385}

As the financial supporter of MIT OCW and many other institutes’ OER projects, the Hewlett Foundation has also aimed at correcting access failure in various educational settings.\textsuperscript{386} The goal of the Foundation’s Education Program is “to use information technology to help equalize the distribution of high-quality knowledge and educational opportunities for individuals, faculty, and institutions within the United States and throughout the world.”\textsuperscript{387} From the OER projects created by MIT, Hewlett Foundation, and other organizations, we can see how NPOs correct the educational access failure through the Internet, their OER platforms, and financial resources.

\textsuperscript{386} See ATKINS ET AL., supra note 100, at 1-2.
\textsuperscript{387} Id.
b. Collaborative Failure

The relationship between collective action and NPOs is not new to academia. Nobel laureate Kenneth Arrow has long pointed out the collective action problems for organizations besides the government and the for-profit firm. NPOs have historically functioned to overcome collection problems as “a tool of social coordination.” In the commons realm, NPOs also facilitate collective actions either between individuals or between organizations. Therefore, this Dissertation argues that NPOs are capable of correcting collaborative failure, which is a mutation of the original contract failure scenario.

i. Collaborative Failure Among Individuals

As peer production has become the central means for commons production, collaboration has been one of the key features of the commons. Because peer production is deemed to be a viable production mechanism outside of the market-based approach, Benkler suggests that non-market organizations, such as NPOs and the government, can play a significant role in the information-production system. Whereas Benkler does not further elaborate on the theoretical role of NPOs, this Dissertation will argue below that the existence of NPOs is crucial to correcting certain contract failures in the peer-production process.

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389 See Frumkin, On Being Nonprofit, supra note 102, at 29, 31.
390 See e.g. Bollier, Commons Movement, supra note 54, at 7; Allen K. Yu, Enhancing Legal Aid Access Through an Open Source Commons Model, 20 Harv. J. L. & Tech. 373, 376 (2007).
391 Benkler, Freedom in the Commons, supra note 37, at 1253-56; see also Benkler, Coase’s Penguin, supra note 31, at 440 (noting that individuals are more willing to contribute to an NPO than to Microsoft).
Although peer production itself can address certain market failures and generate production activities whose costs are relatively lower, it may still fail due to disincentive problems or to collective action problems, arising from coordination between participants, property rights management, resources provision, and potential liabilities. Such failure constitutes the collaborative failure between dispersed participants in the commons production system. By internalizing or reducing the costs of distributed participants’ collective action in the peer-production process, many NPOs play an important role in rectifying the collaborative failure.

Large peer-production projects are always fairly complicated. As a result, communities often have to deal with scenarios in which the rising complexity of the project translates into rising costs. Traditionally, the firm represents the authority in coordinating the production activities of proprietary information. In contrast, without a centralized controlling authority, peer-production projects usually have to take into account the costs of coordinating heterogeneous intellectual contributions. Without coordination, it is difficult for community members to effectively achieve

392 Benkler, Coase’s Penguin, supra note 31, at 375-77; TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 18, 68-69. See also Cooper, From WiFi to Wikis and Open Source, supra note 21, at 146-47, 149-50, 152-53 (illustrating the efficiency resulted from F/OSS process); FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 88 (stating that F/OSS development eliminates similar obstacles stemming from organizational boundaries in the traditional software development arena).

393 Benkler, Coase’s Penguin, supra note 31, at 403.

394 See supra text accompany notes 204-232. See also BOYLE, PUBLIC DOMAIN, supra note 2, at 204 (noting the coordination problem in the commons sphere); Schweik, supra note 54 (“the design of governance structure is a critical factor in determining whether the commons can be ‘long-standing’”); SHIRKY, HERE COMES EVERYBODY, supra note 72, at 53 (“Collective action involve challenges of governance”); TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 70-71 (pointing out that in order to be sustainable, peer-production communities need leadership, coordination mechanism, rules for cooperation, and ways of continuously motivating contribution); Wu, Authorship Policy, supra note 159, at 345 (acknowledging the cost of coordination between actors in an open or collaborative system).

395 FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 79.

396 Mann, Commercializing Open Source, supra note 138, at 21.

397 McGowan, Legal Implications, supra note 54, at 245, 278-79 note 189; WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 175.
their mutual goals via individual contributions. Although peer-production communities may use licensing arrangements, social norms, computer code, or other mechanisms to mitigate the coordination problems, such problems still exist as the projects’ complexities and scale increase.

Ronald H. Coase has argued in his seminal work *The Nature of the Firm* that firms function to internalize the transaction costs stemming from imperfect markets and, as a result, firms increase the markets’ overall efficiency. Therefore, organizations are a solution to the fundamental problem of transaction costs in the sphere of economic activity. Similarly, as formal organizations, NPOs can persist over time while promoting the collective actions and internalizing the transaction costs that result from various commons production activities. Charlotte Hess and Elinor Ostrom pointed out: “Self-organized commons require strong collective action and

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398 Kieff, *Coordination, Property, and Intellectual Property*, supra note 131, at 345 (defining coordination as “the process by which many diverse individuals interact with each other for a particular activity to be achieved effectively). See also Boyle, *Public Domain*, supra note 2, at 186 (admitting the fact that distributed production still needs centralized coordination and governance); Ostrom & Hess, *Knowledge Commons*, supra note 35 (highlighting F/OSS communities’ high degree of coordination).


402 See Fontana et al., *Legal Issues Primer*, supra note 214, at 13 (stating that the formal organization provides continuity to a F/OSS project no matter whether individual contributors stay or leave); Lohmann, *Commons*, supra note 140, at 130 (noting that less formal interaction with a commons community may be problematic in the absence of community leaders). Behlendorf expressed similar idea in an interview regarding the incorporation of the ASF. Interview with Behlendorf, supra note 216 (“[w]e started to realize that with any project like this that was going to be successful, we needed to have some sort of credible story about how it was going to outlive it’s participants, the original founders. And also we wanted to provide a reassurance to the public that this wasn’t something that we were all just going to get tired of one day and go do other things. There would be some sort of a continuance of it.”)

self-governing mechanisms.” This is the backdrop against which many NPOs emerge as a formal organizational alternative that can solve, or at least mitigate, collective action problems and provide a self-governing mechanism to large-scale peer-production communities.

As indicated in Chapter 3, individual contributors have incorporated many NPOs to provide organizational support for and act on behalf of peer-production communities. The NPOs help the community to overcome collective action problems by managing property rights, providing resources, dealing with other entities, protecting individuals from liabilities, and formalizing the decision-making process. Moreover, NPOs that provide legal support and that include the SFLC can also increase an individual’s incentive to collaborate with other participants because these NPOs reduce the legal risks associated with peer-production processes. In summary, NPOs as legal entities formalize the intellectual-exchange process and make the underlying project sustainable. When provided by formal organizations, this stability can eliminate the uncertainties resulting from various informal information-production activities.

404 Hess & Ostrom, supra note 35, at 5; see also Ostrom & Hess, Knowledge Commons, supra note 35, at 43 (noting that the “[e]ffective design of [commons institutions] requires successful collective action and self-governing behaviors”); Zittrain, Future of the Internet, supra note 151, at 143 (“Wikipedia—with the cooperation of many Wikipedians—has developed a system of self-governance.”)

405 Feller & Fitzgerald, Open Source Software Development, supra note 137, at 44-46 (identifying the ASF, the GNOME, and the Python Software Foundation as coordinators for F/OSS projects). Cf. Bernard Enjolras, Coordination failure, Property Rights and Non-Profit Organizations, 71 Annals Pub. & Cooperative Econ. 347, 355-56 (2000) (“organization can be defined as a governance mechanism i.e. a hierarchical and complex mechanism for coordinating and motivating individual activities.”)

406 See text accompanying notes 180-241.

407 See text accompanying notes 204-232.

408 O’Mahony’s empirical research indicates that one reason for the Apache group’s formation of a formal organization is that Apache customers need a certain degree of stability. O’Mahony, Nonprofit

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A casual observation of the NPOs’ presence in the peer-production environment suggests that these organizations exist only around large-scale projects. There are at least two possible explanations for the relationship between NPO incorporation and the size of these peer-production projects. The first explanation is that only when a peer-production project achieves a critical mass of volunteers will the project have enough resources to form an NPO.

According to the second explanation, a formal organization is needed only when the underlying peer-production project’s complexity and scale increase substantially. In other words, there is a correlation between the subject project’s complexity and its need for formalization. According to Schmidt, the history of the ASF reflects the relationship between the scale of the projects and their formalization:

‘Formalize’ means that it’s [stipulated] in our bylaws, we appoint vice presidents, we get official reports to the board, but what the project management committee does is pretty much the same… Apache has grown a lot since it was incorporated. There might only be 2 or 3 different projects at the time we incorporated, now we have 40. So in some sense, this form of formalization has happened more due to the growth of the number of projects.

*Foundations, supra* note 111, at 402. *See also* Enjolras, *supra* note 405, at 353 (noting that uncertainty occasionally leads to coordination failure, which NPOs aim to correct). See text accompanying note 184-187. *See also* FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, *supra* note 137, at 44 (noting the fact that small- and medium-scale F/OSS projected are usually hosted by individuals or informal groups).

*See Baker, Mozilla Project, supra* note 200, at 12 (describing the Mozilla experience concerning the right time to create an NPO for the Mozilla project).

*See text accompanying note 400-405. Behlendorf similarly stated that the incorporation of the ASF is related to the fact that the Apache project was “quickly growing larger than what a single development project could handle, just in terms of the number of developers, the size of the web server project.” Interview with Behlendorf, *supra* note 216. CF. SHIRKY, HERE COMES EVERYBODY, *supra* note 72, at 275 (“the more members have to interact with one another,…the more complex the rules governing their relations have to be.”)

*Interview with Schmidt, supra* note 208.
Moreover, the nature of the NPO is especially suitable for large-scale peer-production projects because the NPO is less likely than for-profits to impair the diverse motivations of distributed contributors. Ostrom and Hess have argued that “[w]hen a resource is large and complex, users…frequently have substantially diverse interests; thus, the costs of sustaining large and diverse resources are much higher than when governing small and relatively homogeneous resources.” To harmonize these diverse interests and motivations, NPOs’ structures provide organizational arrangements for various stakeholders in large commons communities. In the case of F/OSS development, Milinkovich stated that:

There is some number of developers out there for whom contributing to a for-profit company is not something they’ll be interested in doing. They’ll be like picking their work, giving it away for free, and somebody else is making money on it. Contributing to a community, which is hosted at a nonprofit [organization] is a lot more likely to interest this kind of people.

By contrast, it is usually not difficult to coordinate F/OSS development when the community is moderate, and a for-profit company can easily internalize the costs of collective action by hiring all contributors. This phenomenon is quite common for for-profit companies that adopt dual-licensing strategies. MySQL is one such company. Another case is Sleepycat, a company that used a dual-licensing strategy on its Berkeley Database (Berkeley DB) F/OSS that Oracle acquired in 2006. According to an interview with one of Sleepycat’s founders, Keith Bostic, because Berkeley DB’s developer community was a tiny community with relatively few

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413 Ostrom & Hess, Knowledge Commons, supra note 35, at 44.
414 Interview with Milinkovich, supra note 214.
415 Mann, Commercializing Open Source, supra note 138, at 12.
416 Id.
diverse motivations, its founders fairly easily built a consensus regarding the community’s proposal to incorporate as a for-profit company.\textsuperscript{417}

\textit{ii. Collaborative Failure Among Organizations}

Collaborative failure not only occurs on the individual level but also occurs on the organizational level, where several NPOs have played a crucial role. The existence of 516(c)(6) organizations exemplifies how NPOs overcome collaborative failures among organizations. As mentioned in Chapter 3 part C.2, a number of NPOs in the F/OSS world, such as the Dojo Foundation, the Eclipse Foundation, the Linux Foundation, and XMPP Standards Foundation, are categorized as § 501(C)(6) organizations. These organizations have been established by and are composed of proprietary firms. They collect annual dues from their members as their revenue.\textsuperscript{418}

Using the Python Software Foundation and Eclipse Foundation as examples, Ascher compares the differences between § 501(C)(3) and § 501(C)(6) organizations:

I think there are two major differences. One is because Python is a public charity, it has to act for the good of the general public, whereas [§ 501](C)(6) organizations like the Eclipse have to act for the best interest of member organizations... I think from a strategic level, that has an impact. And I think the governance of the Eclipse Foundation is very much a result of the trade association. I mean it put very large board, and a lot more money in ...I think from the beginning, Eclipse was about solving business problems, whereas from the beginning, Python was about programmer problems. So I think there are different history and different motivation for these projects that result different structures.\textsuperscript{419}

\textsuperscript{417} Telephone Interview with Keith Bostic, Architect, Oracle Corporation (June 19, 2007). Bostic also stated that after the incorporation, probably only five developers were outside of the employee group.

\textsuperscript{418} See \textit{e.g.} the Eclipse Foundation, About the Eclipse Foundation: What Is Eclipse and the Eclipse Foundation, \url{http://www.eclipse.org/org/}; Interview with Milinkovich, \textit{supra} note 214.

\textsuperscript{419} Interview with Ascher, \textit{supra} note 209.
For-profits’ collaborative efforts in NPO activities may be explained by the fact that these companies sometimes work with one another to build infrastructure resources for mutual business benefit. Such collaboration is especially understandable when several commercial players have joint incentives in setting standards or developing an open platform product, such as the Linux operating system and the Eclipse platform to ensure its interoperability with middleware and applications. According to an interview with Jim Zimlin, the Executive Director of the Linux Foundation:

[the Linux Foundation] promote[s] platform… [It] act the spokesperson for the Linux platform, rather than any individual companies, such as Novell, Red Hat, or IBM… [W]e [also] standardize the operating system, so we provide the Linux standard base, which is an interoperability specification for Linux… [For] people who choose to comply with the standard, they participate in an interoperable marketplace… So what we do is balance the upstream innovation that open source provides with downstream consistency through the standard organization we do with the Linux standard base.

For many proprietary players, standards and platform products, just like a public streets, are important infrastructure resources for their business development.

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420 See e.g. Samuelson, supra note 137, at 24 (noting that IBM shares the expenses of building F/OSS infrastructure resources with other companies, such as Nokia, Intel, and Hotachi); see also Lim, supra note 137, at 325 (noting “open source solutions like Linux provide the basic infrastructure on which software developers can build applications and businesses”); Interview with Zimlin, supra note 214 (stating that “[the Linux standard base] is really something you need to have in order to compete with Windows, which does have [standard]. I mean be collectively, rather than individually.”)

421 Mann, Commercializing Open Source, supra note 138, at 11; Interview with Zimlin.

422 Interview with Zimlin, supra note 214.

423 Mann, Commercializing Open Source, supra note 138, at 24-25. See also Hansmann, Reforming Nonprofit Corporation Law, supra note 10, at 557 (stating that trade association activities “are public goods so far as members of the trade are concerned”); TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 84, 91 (noting that F/OSS, such as Linux, Apache, and Perl/PHP, is perceived as foundation for business development).
standard or platform product is produced proprietarily, other businesses that build their products on it may be easily locked in by the proprietary standard-setting organizations. Therefore, it is not surprising that proprietary firms have mutual interest in having an NPO collectively develop open standards or platforms. As Zimlin pointed out, “it is a more common structure for standard-setting bodies as [§ 501(C)(6)] trade organizations.”

Professor Ronald J. Mann has also elaborated the collective action between proprietary IT companies through the case of the OSDL (currently the Linux Foundation). Based on his intensive interviews with executives in the software industry, Mann argues that OSDL members “benefit by sharing the costs of production of the Linux operating system,” since a high-quality Linux operating system can help those members to focus on their core competencies. Businesses’ collective action also demonstrates the “demand-revelation” aspect of NPO activities. David J. Kappos, the Vice President and Assistant General Counsel of IBM, vividly described IBM’s active involvement in the Linux Foundation:

[W]e know that the cost, the amount of money that has to be invested to develop and maintain a world-class operating system platform is at least about a billion dollars a year. We found that we can get the same industrial strength, world-class operating system platform with Linux, as a particular example of an open source solution with less than that investment. So by

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424 Mann, Commercializing Open Source, supra note 138, at 11, 23. Cf. Hansmann, Reforming Nonprofit Corporation Law, supra note 10, at 557 (the nonprofit form of trade association gives its members “more assurance that their contributions are being used exclusively for their benefit.”)
425 Interview with Zimlin, supra note 214.
427 Id. at 25.
428 See Ben-Ner & Gui, Theory of Nonprofit Organizations, supra note 104, at 7-8 (explaining how the demand revelation occurs in certain NPO scenarios); Enjolras, supra note 405, at 362 (noting that NPOs are superior to the government in terms of demand revelation).
investing about $200 million a year in Linux and sharing that investment with other companies and individuals, including now Linux Foundation, to vastly leverage our investment and access to a highly scalable, highly reliable, world-class operating system, this avoided what cost us to do all that work on our own...We were a member of Open Source Development Lab from the very beginning...the overriding reason is to share our investment with other like-minded companies, open the development of the Linux eco-system, Linux kernel code, code that goes around it, all the infrastructure that’s involved in Linux.\textsuperscript{429}

In summary, by being members of § 501(C)(6) organizations, proprietary firms can not only enjoy superior collective control or consumption of the organization’s public goods, but also express their preference for mutual coordination.\textsuperscript{430}

Occasionally, § 501(C)(3) organizations also facilitate collective action both on the individual level and the organizational level. For example, the Internet Archive started the Open Content Alliance as a platform “for libraries and archives to work together to build joint collections.”\textsuperscript{431} The Hewlett Foundation has endeavored to connect individual OER projects so that they “can learn from each other and build from each other.”\textsuperscript{432} Therefore, Jack Fascher, the Communications Officer of the Hewlett Foundation, stated in an interview that

\[\text{[t]he other role that a foundation plays that is really crucial but sometimes less focused on is a “convener.” Bringing together people from different places to see what solutions have been reached. Just put people together sometimes solves the problem. But}\]

\textsuperscript{429} Interview with Kappos, \textit{supra} note 217.
\textsuperscript{430} See Ben-Ner & Gui, \textit{Theory of Nonprofit Organizations}, \textit{supra} note 104, at 16; see also Hansmann, \textit{Reforming Nonprofit Corporation Law}, \textit{supra} note 10, at 557 (noting that the nonprofit form of trade association provides its members with “the opportunity to communicate with each other relatively easily.”)
\textsuperscript{431} Interview with Brewster Kahle, Director and Co-founder, Internet Archive, in San Francisco, Cal. (May 6, 2008) [hereinafter Interview with Kahle].
\textsuperscript{432} Interview with Casserly, \textit{supra} note 314.
governments don’t do and private-businesses don’t do. 433

With respect to copyright legislation, several NPOs function as common platform for collaborations between different groups. For instance, PK has invested significant resources in “coalition building” to integrate voices from individuals, business, and other NPOs that share similar ideas of an ideal copyright system. 434 The Open Society Institute has been involved in “strategic organizing,” which is “a mix between convening meetings, bringing players together…[to] advance an issue together, [and] build coalitions.” 435 On the other hand, KEI has “coordinated the efforts to get a draft as a treaty and manage the process, bringing stakeholders together to bring a consensus on a potential draft” 436 in the WIPO’s treaty-enacting process. As Ress of KEI explained regarding one of the organization’s main tasks,

[W]e create events and we invite people to come and talk and it’s a lot of exchange of information and communication. We prepare, outside of the events, discussion lists and provide more information. And basically there’s a lot of coordination of different interest groups within a campaign. And we do a lot of that…it’s kind of creating a network of people with the same interest on an issue as a team. 437

From all these examples, we understand that via functioning as a platforms for various commons activities, NPOs have played a crucial role in solving the collaborative failure between individual and organizational participants.

c. Licensing Failure

433 Interview with Jack Fascher, Communications Officer, William and Flora Hewlett Foundation, in Menlo Park, Cal. (Oct. 5, 2007).
434 Interview with Sohn, supra note 269.
435 Interview with Franz, supra note 273.
436 Interview with Love, supra note 275.
437 Interview with Ress, supra note 274.
There are two types of licensing failure in the commons environment. The first type occurs when the contractual arrangement between creators and users is absent. Because our copyright law protects creators by default when copyrightable materials are first created, it is necessary for users to secure permission for each use of every copyrighted resource. In addition, because U.S. copyright law does not require any formalities, such as copyright notice and registration, it is difficult to ascertain whether a work falls under copyright protection or has shifted into the public domain. As a result, users may hesitate to consume such resources due to fear of infringing. Even if the potential users decide to get a license from copyright holders, it may be extremely expensive to identify, locate, and negotiate with the right holders.

Because of the default rule in copyright law, creators have to take affirmative action if they want to opt out of the full copyright protection. Although some of the creators may initially be willing to allow a particular use of their work, they will likely conclude in the end, that granting permission is unwise because of the high costs of

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438 See e.g. Boyle, Public Domain, supra note 2, at 181; Lessig, Free Culture, supra note 3, at 138, 249-50; Lessig, Re-crafting a Public Domain, supra note 5, at 66-67; Lessig, Creative Economies, supra note 130, at 41; Jessica Litman, Sharing and Stealing, 27 HASTINGS COMM. & ENT. L.J. 1, 13-23 (2004); Loren, supra note 54, at 295; Christopher Sprigman, Reform(alizing) Copyright, 57 STAN. L. REV. 485, 494-95 (2004).

439 Although copyright law’s fair use doctrine allows certain use of copyrighted material without right-holders’ permission, this doctrine is too ambiguous and uncertain for users to apply. See e.g. Lemley, supra note 71, at 566; Lessig, Remix, supra note 76, at 100; Jessica Litman, Revising Copyright Law for the Information Age, 75 OR. L. REV. 19, 45-46 (1996). Given such uncertainties, most users tend to secure copyright licenses beforehand regardless of need. See James Gibson, Risk Aversion and Rights Accretion in Intellectual Property Law, 116 YALE L.J. 882, 887-95 (2007).

440 See Lessig, Free Culture, supra note 3, at 137-38, 249-50, 288; Litman, supra note 438, at 14-18; Loren, supra note 54, 281.

441 Boyle, Mertonianism Unbound, supra note 35, at 126.

442 See e.g. Boyle, Public Domain, supra note 2, at 12; Elkin-Koren, What Contracts Cannot Do, supra note 38, at 380; Lessig, Free Culture, supra note 3, at 222-23, 249, 288; Lessig, Re-crafting a Public Domain, supra note 5, at 67; Loren, supra note 54, at 272.

443 See supra text accompanying note 438; Lessig, Remix, supra note 76, at 105.
legal fees for the licensing process. Therefore, the first type of contract failure occurs between individual creators and users of intellectual resources and is due to prohibitively high information and transaction costs.

In this sense, free licensing arrangements that facilitate the free distribution of copyright-protected works are desirable in this type of contract-failure scenario. These licenses help creators to release and distribute their works for public use under certain conditions. Among all these licenses, the CC licenses are most flexible for reflecting creators’ preference regarding reuse of the creators’ works. Legal devices like the CC Attribution License allow the creators to waive some of their copyrights and to simultaneously retain other copyrights, such as the right to prevent dissemination of altered or commercialized copies. Such free licenses not only enable creators to exercise their rights flexibly and economically, but also facilitate users’ efforts to identify creative works that are readily available for reuse without bargaining. Therefore, by producing and freely distributing the licenses, CC, the FSF, and other NPOs have provided the public with greater access to copyrighted materials than the default legal rules would otherwise allow.

Nonetheless, despite various free licenses, users may still encounter legal difficulties remaking various commons resources from the Internet. These difficulties

444 Elkin-Koren, What Contracts Cannot Do, supra note 38, at 380. See also Boyle, Public Domain, supra note 2, at 14 ("[a]lmost everything up on the Internet is copyrighted, even if its creators…would prefer it to be in the public domain.").
445 Boyle calls this failure as “failed sharing.” Boyle, Public Domain, supra note 2, at 182.
446 See id. at 15 (arguing that the COPYRIGHT system occasionally satisfies neither creators’ nor users’ needs because of the high cost associated with seeking permission).
447 Cf. Carroll, supra note 292, at 47 (“Creative Commons licenses act as a disintermediating force because they enable end-to-end transactions in copyrighted works.”)
448 Lessig, Free Culture, supra note 3, at 280.
449 See e.g. CC Legal Code of Attribution 2.5, http://creativecommons.org/licenses/by/2.5/legalcode (last visited May 26, 2009).
450 See e.g. Carroll, supra note 292, at 48; Lee, supra note 182, at 1540.
are due to the incompatibilities between different free licenses, which constitute the second type of licensing failure. Ahrash Bissell, the Executive Director of the ccLearn Project under CC, vividly described how the incompatibilities between diverse licensing terms hinder collaboration and content reuse in the digital world:

If you are a teacher, and you are trying to assemble a lesson plan, you grab something from Wikipedia and something from the OpenCourseWare, and something else from the Connexions. Those things are licensed under three different conditions, and they cannot be put in the same document without violating at least one of these licenses. Under fair use educational exceptions, you can still do it as long as you don’t redisseminate your work...But the law does not allow you to put it back [online]. You can’t put it up for anybody to see and adopt.

The incompatibility problem has draw attention from the NPOs that have produced and adopted free licenses. For example, CC has launched a project to facilitate interoperability among several license types. The Wikimedia Foundation has initiated community discussions on relicensing content to overcome the incompatibility predicament as well. More recently, at the request of the Wikimedia Foundation, the FSF released version 1.3 of the GNU Free Document License

451 See e.g. Boyle, Public Domain, supra note 2, at 204; Elkin-Koren, What Contract Cannot Do, supra note 38, at 412-14; Lessig, Re-crafting a Public Domain, supra note 5, at 77; Lawrence Lessig, CC in Review: Lawrence Lessig on Compatibility, Nov. 30, 2005, http://creativecommons.org/weblog/entry/5709.
452 Interview with Bissell, supra note 347.
453 Lessig, Re-crafting a Public Domain, supra note 5, at 78; Interview with Bissell, supra note 347.
(FDL), which allows public wikis like Wikipedia to relicense their FDL-covered materials under the CC Attribution-ShareAlike (CC-BY-SA) 3.0 license.\textsuperscript{456}

According to Bissell, “[p]eople in the movement may have disagreement on what the best solution is, but they all know there is an organization [CC] working to figure out for the community.”\textsuperscript{457} Therefore, although this incompatibility issue has not been solved yet, these NPOs are pioneers in providing potential solutions for the future.

3. Theoretical Implications

a. NPO as a Trusted Intermediary

Hansmann’s contract failure theory is sometimes referred to as trust theory\textsuperscript{458} or the trust hypothesis\textsuperscript{459} because of its proposition that NPOs are trusted by parties who voluntarily contribute their resources to them.\textsuperscript{460} Contract failure theory focuses on circumstances in which customers are more likely to trust NPOs than their for-profit counterparts because the former are not motivated by profit, and, thus, may be less likely to act opportunistically toward consumers.\textsuperscript{461} Trust functions as both the catalyst for the formation of the NPO and as the key ingredient for its survival.

\textsuperscript{456} FSF, GNU Free Documentation License, Version 1.3 (Nov. 2008), http://www.fsf.org/licensing/licenses/fdl.html.
\textsuperscript{457} Interview with Bissell, supra note 347.
\textsuperscript{458} See e.g. DOLLEY & WALLIS, supra note 323, at 9; Kingma, supra note 143, at 61-62. See also Enjolras, supra note 405, at 359 (noting that Hansmann’s main point is that NPOs are more trustworthy than for-profits); FRUMKIN, ON BEING NONPROFIT, supra note 102, at 67, 69, 70 (introducing the contract failure theory based on the concept of trust).
\textsuperscript{460} Hansmann, Nonprofit Enterprise, supra note 103, at 896.
\textsuperscript{461} Cf. Kenneth Arrow, Uncertainty and the Welfare Economics of Medical Care, 53 AM. ECON. REV. 941, 965 (1963) (observing that in medical care, “the very word, ‘profit,’ is a signal that denies the trust relations”); Enjolras, supra note 405, at 353 (“The potential trustor[…]decision will depend on his estimation of the probability that the trustee complies to the norm of reciprocity.”)
Hansmann argues that donors usually aim to donate their resources to a specific group of recipients. By contrast, in the case of commons peer production, there are usually no specific recipients. Because all of the resources are donated as commons, the intended beneficiary of the donations is actually the whole society or community. Nonetheless, the two types of donors are concerned about whether or not their donations will eventually fall into the hands of the intended beneficiaries. In the F/OSS arena and probably in other commons arenas, stealing the commons and converting it into proprietary information is a serious infracton of accepted norms. Consequently, the NPOs may serve as a trusted intermediaries that will not privatize intellectual resources donated by volunteers.464

In both CPRs and intellectual-commons scenarios, stakeholders face tragedy of the commons or tragedy of the anti-commons due to insufficient trust. These disadvantageous situations can usually be corrected if related parties find ways to increase trust, which plays an important role in commons communities. Trustworthy information regarding the internal and external environments is perceived as being one of the necessities for building an effective commons governance

462 Hansmann, Nonprofit Enterprise, supra note 103, at 846-47.
463 FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 96.
464 It is also possible for for-profit firms to adopt the peer-production model for information production. For example, YouTube (http://www.youtube.com/) is a popular free video-sharing Web site owned by Google. The site allows users to upload, view, and share video clips. Other examples of the commercial adoption of the peer-production model include Amazon’s book reviews, Google search engine’s PageRank algorithm, and Slashdot’s moderation system. See e.g. BENKLER, WEALTH OF NETWORKS, supra note 2, at 75-80; Lee, supra note 182, 1507-08, 1513; LESSIG, REMIX, supra note 76, at 194-96; Lim, supra note 137, at 302, 309-11; Quiggin & Hunter, Money Ruins Everything, supra note 62, at 226. Among all these examples, some businesses have decided to release peer-produced information as intellectual commons. Such examples include Netscape’s Open Directory Project and Yahoo’s Flickr website. The former is a peer-produced directory of the World Wide Web under Open Directory License, and the latter is a photo-sharing website adopting CC licensing by default. See e.g. Benkler & Nissenbaum, Commons-based Peer Production, supra note 399, at 399-400; LESSIG, REMIX, supra note 76, at 192-93; SHIRKY, HERE COMES EVERYBODY, supra note 72, at 33-39.
465 Hess & Ostrom, supra note 35, at 11-12.
466 Bollier, Commons Movement, supra note 54, at 1.
mechanism. Therefore, researchers have suggested that we need trustworthy institutions to protect and to enhance the commons, and that these institutions should ideally be free from corporate control.

It is not surprising that for-profit companies can rarely play the role of trustworthy institutions. These companies may adjust or withdraw their commitment to commons communities because of their profit-making concerns. As Hecker of the Mozilla Foundation described in an interview:

[I]f you have a company, it is ultimately responsible to its shareholders…In many cases of course, companies will basically act the way they think the market or their private investors want them to go…So although a company might run an open source project, they might have people participate in the community, there is always this lingering concern that if the company’s priorities change or the market is forced to do something else, then basically anything they might have done for the project will just simply be discontinued or changed or whatever. There is a real lack in basic trust there, [or] there is leak in trust.

Behlendorf similarly expresses communities’ concerns regarding for-profit’s role in the F/OSS realm:

[Even if you were for-profit, even if you gave away a lot of the money that you made, or did some other giant handout, it still wouldn’t be the same. People would still naturally be a bit more suspicious.}

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467 Ostrom & Hess, Knowledge Commons, supra note 35, at 66.
468 TOMALES BAY INSTITUTE, supra note 140, at 3; see also Ostrom & Hess, Knowledge Commons, supra note 35, at 43 (noting that “[e]ffective design [of commons institutions] requires…trust.”)
469 Cf. Levine, supra note 148, at 253 (stating that “corporate power represents a constant threat to knowledge commons…there is always possibility that…firms will enclose or undermine the commons.”)
470 Interview with Hecker, supra note 200.
471 Interview with Behlendorf, supra note 216.
Thus, for-profits may not be able to credibly internalize the philanthropic objectives of F/OSS and other commons communities.\textsuperscript{472}

But contrast, NPOs’ “non-distribution constraint” constitutes an assurance that voluntary contributions from the communities will reach the intended recipients.\textsuperscript{473}

Therefore, NPOs’ non-distribution constraint provides a certain degree of trust that enables stakeholders in the commons environment to act collectively in their mutual interests. IBM’s decision to incorporate the Eclipse Foundation can be used to explain such differences. According to Kappos, Vice President and Assistant General Counsel of IBM,

\begin{quote}
[I]n the case of Eclipse, we knew we had some great software development tools that could benefit from being opened up and being converted to open source and having a development community around them to offer a competitive open set of development tools. We knew that the community would never emerge to make Eclipse successful as long as those tools remained controlled by IBM. We knew that we had to somehow put them into public domain, and do it as a way to show a good stewardship, good citizenship, and a community. We felt that the way to do that was to separately incorporate Eclipse and set it off on its own with the independent governance. IBM would participate along with everyone else in the community. That was really because we wanted Eclipse to succeed as an independent tool set and garner broad base support and to become a competitive development platform that a large community of programmers could use and improve.
\end{quote}

\textsuperscript{472} Lerner & Tirole, \textit{Economics of Open Source}, supra note 137, at 226. Cf. Waters, \textit{supra} note 137 (reporting the opinion of Mark de Visser, a F/OSS company's marketing officer, that “I’m not convinced that any corporate entity can own an open source project”).

\textsuperscript{473} Such understanding is consistent with Benkler’s argument that \textit{unilateral appropriation} is a threat to peer production projects since it may conflict with contributors’ motivations. Benkler further indicated that one example of unilateral appropriation is the “commercialization of the common efforts for private benefit.” See Benkler, \textit{Coase’s Penguin}, \textit{supra} note 31, at 439. Cf. \textit{Lessig, Remix}, \textit{supra} note 76, at 226-27 (stating that some artists using signals to encourage “others to participate in the sharing economy, giving them confidence that their gift won’t be used for purposes inconsistent with the gift”).
That’s why we incorporated it and separated that from us.\textsuperscript{474}

In other words, an NPO provides the community with trust and independence from any single commercial power. Mike Milinkovich, the Executive Director of the Eclipse Foundation, described how trust is important for the Foundation:

We are a trusted agent in several different directions. One is commercially we are a neutral player. We try to enable opportunities for the commercial player in the ecosystem as opposed to taking opportunities for [our]self. The other area is that among the developers community, we help manage the development process, help make sure the projects are doing the very things, and provide mentoring to projects. That’s more inward looking, but that’s very important. The more the developers or committers on the projects trust the Eclipse Foundation, and view what it does is providing value to them, I think, the better off we are.\textsuperscript{475}

In the F/OSS scenario, NPOs provide trust by being neutral to various stakeholders. NPOs’ neutrality can help to convince commons contributors that their contribution will not be managed for the interest of a specific proprietary business. As Milinkovich pointed out:

Whenever an organization is in the center of the community or the ecosystem, [it] is the important that organization be viewed as a neutral player. For-profit entities are responsible for their shareholder to make as much money as they can. It’s difficult for them to be a neutral player. And even more importantly, it’s difficult for them to be perceived as a neutral player. Even if they are absolutely in the right place, they’re gonna run the cases where their motives will be suspected in the eyes of others. So people will question why they are making decisions. Is this really for the benefit of the entire community or it’s for their benefit? ... [W]hat we spend our time talking about in the Eclipse Foundation is what can we do to help the community, which is quite

\textsuperscript{474} Interview with Kappos, supra note 217.
\textsuperscript{475} Interview with Milinkovich, supra note 214.
different from what you do in a company setting, which
is what we can do to maximize profit.\footnote{Id.}

In the discussion of for-profits’ role in Apache projects, Schmidt similarly stated that

Something would be very controversial or debated if a
for-profit company want to provide for free some
infrastructure to Apache. It might be fine, but it would
be something that will have a lot of questions be raised
about, like unnecessarily endorsing this company, or
we’ve been locked into particular technologies…any
sort of control being able to direct anything about the
Foundation, that will not be accepted by anyone in the
Apache. As far as how it will affect users of Apache, I
think, it probably would reduce the reputation of the
Foundation as being a non-biased entity, that isn’t part
of any corporation.\footnote{Interview with Schmidt, supra note 208.}

Trolltech, a Norwegian software company, and the KDE Free Qt Foundation
provide interesting examples regarding trust concerns in different organizational
forms. Trolltech is a primary supporter of the Qt toolkit KDT F/OSS project.\footnote{DEEK & MCHUGH, OPEN SOURCE, supra note 136, at 109; VAN WENDEL DE JOODE ET AL.,
PROTECTING THE VIRTUAL COMMONS, supra note 183, at 83.} In
order to establish trust from the community and ensure the continuing development of
the Qt toolkit KDT project, Trolltech. established the KDE Free Qt Foundation as an
NPO to oversee the F/OSS project in 1998.\footnote{van Wendel de Joode et al., Protecting the Virtual Commons, supra note 183, at 84.} An agreement between these two
organizations “gives the Foundation the right to release Qt under a BSD-style license
in case Trolltech doesn’t continue the development of the Qt Free Edition for any
reason including, but not limited to, a buy-out of Trolltech, a merger or
bankruptcy.”\footnote{KDE Free Qt Foundation, KDE Free Qt Foundation,
http://www.kde.org/whatiskde/kdefreeqtfoundation.php (last visited May 26, 2009).}
Another example of an NPO established as a result of the distrust of for-profit companies is the Python Software Foundation. Before the incorporation of the Foundation, the Python code had been hosted by BeOpen.com, a for-profit company that hired key Python developers. Nevertheless, when the Python community realized the fact that BeOpen.com had its own business priorities regarding Python, the community decided to establish an NPO that could consistently represent itself. From the examples of the KDE Free Qt Foundation and the Python Software Foundation, it is evident that the trust provided by NPOs is crucial for F/OSS communities.

This pattern may also explain why a number of F/OSS NPOs, such as the FSF and the ASF, have required contributors to convey or to license their IP to organizations. Sullivan from the FSF explains how such practice relates to trust from the community:

"One of the things that our copyright assignment agreement promises is that the software will always be distributed under a free software license. So even though we are the copyright holder on all the software, we’re not able to, for example decide that we’re going to make it all proprietary tomorrow because that would be against the agreement we’ve made with all the contributors. So I guess a corporation would have to offer that same sort of promise to people. Because

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481 Ascher, Python Software Foundation, supra note 161, at 5-6.
482 Id. at 5-6.
483 See e.g. Interview with Ascher, supra note 209; Interview with Behlendorf, supra note 216; Interview with Cliff Schmidt; Capek et al., IBM’s Open-source Involvement, supra note 137, at 251; DEEK & MCHUGH, OPEN SOURCE, supra note 136, at 225; Mann, Commercializing Open Source, supra note 138, at 15; ROSEN, OPEN SOURCE LICENSING, at 47; ASF, The Apache Software Foundation Individual Contributor License Agreement V2.0, at http://www.apache.org/licenses/icla.txt (last visited May 26, 2009); FSF, Why the FSF Gets Copyright Assignments from Contributors, at http://www.gnu.org/licenses/why-assign.html (last visited May 26, 2009); TPF, Contributor License Agreement, http://www.perlfoundation.org/contributor_license_agreement (last visited May 26, 2009). See also FONTANA ET AL., LEGAL ISSUES PRIMER, supra note 214, at 9 (identifying legal certainty as the primary reason of copyright ownership transfer in F/OSS projects).
otherwise since it’s not the core mission of the corporation, I would expect people to be distrustful that it might be free software today, but since the company holds the rights to the software. They could change that in the future. I know there are some situations in the community already with people that do… do dual licensing where they have a free software version and a proprietary version, and people are reluctant to commit to the free software version because…if they have to assign copyright to the company,…the company can then take that code and use it in the proprietary version.484

The Patent Commons Project, initiated by the Linux Foundation, also encourages patent holders to contribute patents to the Foundation, which is dedicated to accelerating the development and the use of the Linux system.485 With NPOs’ non-distribution constraint, their management of F/OSS code or patent pledges is less likely to extract huge profits from a contribution;486 thus, these NPOs can play the role of “trustees of the ‘exclosed’ commons”487 better than proprietary firms. Kappos of IBM described vividly NPOs’ role in providing F/OSS communities with trust, independence, and neutrality, which cannot be brought by for-profits:

[A]s a general proposition, given the nature of the open source development model, if you want to have a successful project, you really do have to make it independent, the interest of the project ahead of any individual corporate commercial interest…I think it’s easier to do that and it’s easier to do it in a transparent way. It’s easier to do it in a way that it doesn’t make people suspicious even if the work really used being done independently and appropriately. It doesn’t cause people to be suspicious, easier accomplish all of that by making the entity separate and independent. The community is very resourceful and very perceptive. No

484 Interview with Sullivan, supra note 207.
486 Rosen, Open Source Licensing, at 95.
487 See Mann, Commercializing Open Source, supra note 138, at 27, n. 117.
matter what a company does to make the open source project look like the independent and separate, if it’s not really independent and separate, the community will see through whatever façade you put up and they won’t accept it. So the real solution is that you really have to go about this project as a good steward and a good citizen and understand going in that you have to put the interest of the project first. If you do that, you can succeed. If you don’t, I believe, you probably won’t succeed, no matter how much you tell people that you really are trying to be a good citizen.488

Furthermore, Josh Lerner and Jean Tirole use Netscape as an example to illustrate the incompatibility between the firm’s for-profit nature and the trust required by the F/OSS-community development process.489 Based on its profit motive, Netscape intended to make proprietary use of its F/OSS project and hesitated to release all the browser code as F/OSS.490 Such behavior made Netscape’s commitment to F/OSS development questionable at that time.491 As a for-profit company, it was difficult for the Netscape management to relinquish control over its code and allow its F/OSS project to be guided by something other than its revenue plans.492 As a result, some suggested that the Mozilla Project led by Netscape was not a real F/OSS project but a “Netscape stooges”.493 Indeed, the members of successful F/OSS communities trust the communities to respect—not to exploit—the members’ contributions.494

Trust plays a crucial role in OSI, which defines the open source standard for F/OSS communities. Danese Cooper, the board member of OSI, articulated in an

488 Interview with Kappos, supra note 217.
489 Lerner & Tirole, Economics of Open Source, supra note 137, at 226-27.
490 Id.
491 Id. at 226.
492 Baker, Mozilla Project, supra note 200, at 5.
493 Id. at 5, 11.
494 Goldman & Gabriel, Innovation Happens Elsewhere, supra note 54, at 63-64.
interview how the nonprofit status of OSI helped to build neutrality and trust among F/OSS communities:

[The reason that it was important that we be a nonprofit is that it implies neutrality. We weren’t owned by any commercial entity and that was really important, both for the developers that were trusting us that we were applying these rules correctly, and for the corporations that were looking for endorsement… if we had not been incorporated as a nonprofit with the plurality of support, it would have been easy for Microsoft to say ‘this is just a smear campaign against us’… The nonprofit status just makes it easier to explain that we’re not in this for the money at the outset… evidence of neutrality and separation from companies has been very important for us. It would destroy our credibility not to have that… we [also] made a way for corporations to reach those developers that they would have not otherwise have easily got to. Because they would have had to build trust on their own, and that would have been difficult or impossible.]

In commons operating beyond the F/OSS world, NPOs similarly provide trust, which is indispensable for the sustainability of communities. As an NPO, the Wikimedia Foundation has decided not to run the Wikipedia project on commercial ads because its founder Jimmy Wales believes that commercial ads may be harmful to the project’s credibility and community trust. In the realm of digital archiving and digital libraries, scholars have shown distrust of Google’s for-profit nature that may manipulate or even ultimately enclose the company’s online library project. By contrast, Brewster Kahle, the director and co-founder of the Internet Archive, analyzes how the organization’s nonprofit status makes contributors decide to deposit their content with the Archive:

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495 Interview with Cooper, supra note 166.
496 LESSIG, REMIX, supra note 76, at 161-62.
497 Pessach, supra note 302, at 96-97; Tushnet, supra note 303, at 1023.
It seems when people look to see that their website is on the Internet Archive or that do they want to go and put their books, music, video on the Internet Archive, it’s whether they are being taken advantage of, are they better off or are they worse off with being in the Internet Archive. And we always want to make it so that they feel they are better off and that they are not being taken advantage of. And a key part of that strategy is being not-for-profit… It’s because that we are not making a profit nor can we be bought. Many organizations are bought or they go out of business fairly fast, and nonprofits cannot be bought. This we see as another one of the reasons why we became a nonprofit so that we could last a long time.498

In summary, by enabling trust that is difficult to gain for for-profit enterprises, NPOs’ “non-distribution constraint” has provided a proper “organizational incentive structure” for commons-based peer production.499

Trust is also important for political advocacy NPOs to build credibility among their supporters. With the non-distribution constraint, NPOs usually “appear to be independent for the public good” and face much less suspicion than for-profits regarding their motives in engaging in political advocacy.500 As Ress of KEI explained in an interview,

We want to keep our independence and our ability to criticize the industry whenever we want… I think…that people trust that what we’re doing is because we believe in our mission and not because there’s a profit attached to that position. It is very important for us. Our word or our honor is probably part of our power. It’s not something you can sell…[for example,] we don’t take… money from Microsoft. And I think people trust us when we’re criticizing this industry. It’s not because we’re

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498 Interview with Kahle, supra note 431.
499 Cf. DEEK & MCHugh, OPEN SOURCE, supra note 136, at 212 (“Collaboratively sharing and seeking information from or with others requires an appropriate organizational incentive structure.”)
500 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 58-59.
being paid by another one. And I think it’s important because we have more credibility.\textsuperscript{501}

Although NPOs may form coalition with major for-profits on certain legislative issues, NPOs’ non-distribution constraint makes them significantly different from for-profits. As Franz of the Open Society Institute explains:

the difference is that [business] interests might collide and that’s why you can form a coalition with industry, but ultimately the business has still its own profit. It’s still responsible to its shareholders and that’s its ultimate interest. One day we might be in a coalition with Google and Microsoft and Intel and others, but the next day they might not care about the issue anymore or have other agenda items…there often is an overlap between public interest and business interests, but it’s not a permanent thing.\textsuperscript{502}

Moreover, with the non-distribution constraint, a nonprofit publisher, like the PLoS, is less likely to guard access to research thereby jealously maximizing profits;\textsuperscript{503} thus, the publisher can do a better job in aligning its own interests with the interests of the authors and readers. Therefore, NPOs such as the PLoS can become trusted intermediaries that facilitate the exchange of ideas between scholars. Furthermore, the Wikipedia platform has to build trust for its participants to contribute their time and knowledge. However, for-profit companies find it much more difficult to earn this trust from intellectual contributors.\textsuperscript{504} As a result, an NPO and the trust

\textsuperscript{501} Interview with Ress, supra note 274.
\textsuperscript{502} Interview with Franz, supra note 273.
\textsuperscript{503} Cf. Hunter, Walled Gardens, supra note 99, at 636 (noting that law reviews have greater opportunity to be open access because, in contrast to commercial publishers, law reviews are not responsible for maximizing the shareholders’ value).
\textsuperscript{504} See e.g. id, at 64 (stating that “[m]any open-source developers worry that a company will decide to sponsor an open-source project because it plans to take the community’s work, package it up in a proprietary product, and deny the community access to it”). But see id. at 164 (illustrating F/OSS communities’ similar distrust of for-profit firms, but using Sun Microsystems as an example to suggest that for-profits can also earn trust from F/OSS communities under certain circumstances).
that it provides represent an institutional mechanism that best manages the commons.505

b. Organization Still Matters in Cyberspace

Many of the F/OSS and other commons communities operate according to principles that differ greatly from the principles driving proprietary firms. Conventional wisdom attributes the success of F/OSS and other peer-production projects to the Internet and characterizes the Internet as the most important medium connecting contributors and users to one another.506 Many commentators similarly suggest that the Internet is a perfect medium for eliminating the middleman and transaction costs stemming from organizational structure.507

Indeed, by removing the temporal and geographical obstacles of interpersonal communication, the Internet gives individuals the ability to distribute their contributions quickly and broadly, and to collaborate with other participants all over the world. Nonetheless, although the Internet has radically transformed the boundaries

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505 In making this argument, I do not mean that the nonprofit organizational form is the only way to build trust in the commons environment. There are certainly other ways to construct trust. For example, the licenses, such as the GPL, can shape trust within the community as well. See Interview with Bollier, supra note 140. Neither do I suggest that for-profits can never gain trust from the commons communities. IBM and Red Hat are great examples of how for-profits obtain credibility from the commons communities. See e.g. LESSIG, REMIX, supra note 76, at 184; TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 81-83
506 See e.g. Benkler, Coase’s Penguin, supra note 31, at 424; FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 125-26; GOLDMAN & GABRIEL, INNOVATION HAPPENS ELSEWHERE, supra note 54, at 64-65; McGowan, Legal Implications, supra note 54, at 285; Quiggin & Hunter, Money Ruins Everything, supra note 62, at 218. See also Lerner & Tirole, Economics of Open Source, supra note 137, at 200, 202 (stating that the Internet widely expands F/OSS activities).
507 See e.g. SHIRKY, HERE COMES EVERYBODY, supra note 72, at 47 (arguing that social tools based on technologies have enabled loosely-organized groups to cooperate on complex projects without institutional direction); WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 171 (citing Kevin Kelly’s and Donald Tapscott’s works as examples of this type of argument); Open, But Not as Usual, ECONOMIST, Mar. 16, 2006, available at http://www.economist.com/business/displaystory.cfm?story_id=5624944 (last visited May 26, 2009). But see JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET? ILLUSIONS OF A BORDERLESS WORLD 68-77 (2006) (refuting the alleged disintermediating effects of the Internet by pointing to government regulation over it).
of traditional organizations, the above Internet-based arguments overlook the fact that new forms of organizational structures have arisen to reconfigure information-production processes. The analysis of contract failure in the commons discourse demonstrates how humans come together, create communities and organizations, and make decisions and rules in order to sustain a common resource or to achieve a desired outcome. This analysis suggests that in addition to the Internet, many NPOs help connect people to each other and to pool resources in the digital world.

Conventional wisdom has viewed F/OSS development as a decentralized method of information production, in contrast to the centralized model of single firms’ closed development. On the basis of such understanding, Professor Richard A. Epstein has suggested that F/OSS communities have no formal governance mechanism; thus, he doubts that the F/OSS movement can be sustained. Epstein has correctly argued that collaborative failure or a collective action problem might exist for community members who try to coordinate their actions in the F/OSS development process, but he may not be aware that many F/OSS communities have already developed their own governance mechanisms with NPOs at their center to resolve such a problem. By considering NPOs that minimize collaborative failure, it is apparent that although

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508 Cf. Carroll, supra note 292, at 45 (describing the disintermediation and re-intermediation in Internet age); Elkin-Koren, What Contracts Cannot Do, supra note 38, at 384-85 (stating that digital networks reduce the role of old intermediaries but bring in new intermediaries); Lawrence B. Solum, Download It While It’s Hot: Open Access and Legal Scholarship, 10 LEWIS & CLARK L. REV. 841, 857-59 (describing the disintermediation and re-intermediation of legal scholarship in the Internet world); WEBER, SUCCESS OF OPEN SOURCE , supra note 61, at 186 (stating that “[t]he Internet modifies demand for formal organization but does not erase it).

509 See e.g. Lessig, Limits in Open Code supra note 42, at 764-65.


dispersed contributors participate in F/OSS projects in a decentralized way, a formal central organization can help to reduce coordination costs in the peer-production model. The observation that NPOs host large F/OSS projects is consistent with classic organization theory, which posits that the intricacy in the division of labor will bring about a formal organizational structure.\textsuperscript{512} In this sense, organizational structure still matters in the Internet economy.

This understanding may have some policy implications for F/OSS and the Internet architecture generally. Professor Lessig has argued that it is more difficult to regulate scattered F/OSS developers than to regulate a few large firms; therefore, the decentralized production implies that government will be less able to control F/OSS architecture than to control architecture produced by proprietary firms.\textsuperscript{513} Because it is always difficult to take actions against participants scattered around the world,\textsuperscript{514} and because control over F/OSS is more diffuse than control over proprietary software,\textsuperscript{515} this Dissertation agrees with Lessig’s incisive point that as a production model decentralizes, governments experience a corresponding decline in available regulatory approaches to information-production processes. However, previous analyses of collaborative failures have shown that, when the scale of F/OSS projects is within a certain range, F/OSS communities would desire a formal organization so that they can internalize transaction costs. Accordingly, once an F/OSS project has a central

\textsuperscript{512} WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 171.
\textsuperscript{514} WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 178-79.
\textsuperscript{515} Mann, Commercializing Open Source, supra note 138, at 21.
organization in which the community can coordinate distributed creative activities, the F/OSS community will subject itself to more regulatory control.\textsuperscript{516}

In the context of access failure and licensing failure, I similarly found that although the importance of the traditional intermediary has decreased, formally incorporated organizations remain necessary for a number of commons-production scenarios. For example, with formal organizations, the PLoS and the Internet Archive can more efficiently pool information for potential users.\textsuperscript{517} In addition, by providing a licensing mechanism that bypasses traditional middlemen (\textit{i.e.} lawyers), CC itself has become an important intermediary organization for content creators, users, and the free culture movement.\textsuperscript{518}

4. The Limitations of Contract Failure Theory

Hansmann’s contract failure theory helps to explain the behavior of some NPOs in the commons discourse, especially those that provide the public with access to valuable information, collaborative platforms, and free licenses. However, Hansmann’s assumption that consumers distrust for-profit organizations may be exaggerated in some commons scenarios. Indeed, for-profits and NPOs may coexist and compete with each other in certain industries.\textsuperscript{519} Nonetheless, for-profit actors occasionally have insufficient incentives to invest in certain public goods because they cannot capture the most value from this type of investment.\textsuperscript{520} For instance, Bissell has

\begin{itemize}
\item \textsuperscript{516} Cf. McGowan, \textit{Legal Implications, supra} note 54, at 270-71 (stating that Lessig’s argument is correct only for small and less complex F/OSS projects that require less coordination).
\item \textsuperscript{517} Cf. Carroll, \textit{supra} note 292, at 52, 54 (claiming that the PLoS and the Internet Archive are new intermediaries for creators and users in the Internet environment).
\item \textsuperscript{518} Carroll, \textit{supra} note 292, at 47-49; \textit{Lessig, Free Culture, supra} note 3, at 282.
\item \textsuperscript{519} See e.g. Dimaggio & Anheier, \textit{Sociology of Nonprofit Organizations, supra} note 16, at 139.
\item \textsuperscript{520} Cf. Davis, \textit{supra} note 332, at 1084 (asserting that “while for-profits might only take into account the net financial returns that they realize from producing contracts, nonprofits might take into account a
been skeptical about for-profits’ willingness to become involved in CC’s task of license interoperability, which is crucial to free culture and OER movements:

> [t]here is no question that the movement is being driven by philanthropic interest…it’s not motivated at its core by business interest…For business, you probably find a model just choosing a particular license and restricting yourself only to the work under that license. But I don’t see a reason that business wants to deal with the interoperability issue.521

Greg Newby, the CEO of the Project Gutenberg Foundation, similarly articulates for-profits’ insufficient incentive in the Foundation’s mission of digitally preserving proofreading public domain books:

> [I]t’s probably not that realistic…for a commercial enterprise to spend several hundred dollars or maybe a couple thousand dollars to digitize a book that that doesn’t have that much value. Because it’s no longer in print; it’s not very widely available; it’s a not a book that people are reading; it’s not a book that people relied upon. And most books are like that.522

Patrick O. Brown, the co-founder and board member of the PLoS, also explained in an interview that the organization was established as an NPO because its mission cannot provide sufficient incentive for profit-seeking investors:

> I thought of it as a mistake to start [the PLoS] as a for-profit…[because] what we were trying to do was something that there was no clear way how we were going to make it work as a business. What we were basically doing and our motivation was to do something that is in the public interest and is essentially an extension of a heavily publicly subsidized scientific enterprise, where it seemed to me that there would be a lot of interest from charitable organizations and

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521 Interview with Bissell, supra note 347.
522 Interview with Newby, supra note 336.
scientific funding agencies…to…work with us to make this successful for the purpose of the greater good that they are trying to advance. That’s like their mission…It’s really more of an effort to do a public service, even if it wasn’t going to make money. We would have a hard time raising investment money for a for-profit, given the fact that we didn’t have an established business model...So that just seemed to me like the way to go, was to do it as a nonprofit and say, look, we’re doing something very risky, let’s try to accomplish something important for the public good and try to raise money on that basis.523

In contrast, due to the no-distribution constraint, NPOs are in a better position to take benefits and costs that are not recognized by for-profit organizations into account.524 NPOs’ provision of, and consumers’ consumption of, freely available repositories of valuable information, legal support for individuals, and public licenses525 usually have little to do with a situation, in which consumers worry that for-profits will attach excessive charges to their products and services. Cohn of the EFF explained the organization’s differences from a for-profit company:

[I]f you’re a for-profit organization, your main goal has to be to make profit…And anything that gets in the way of that goal like having the social conscience, protecting your customer’s privacy, you know there’s a tension there. We don’t have that tension. People give us [donations] to do good and we go out and do good…we don’t have a competing concern about trying to be in the black.526

Therefore, Hansmann’s assumption regarding for-profits’ incentive to over-charge may need to undergo a tune-up in light of the aforementioned scenario. This

523 Interview with Brown, supra note 339.
524 Davis, supra note 332, at 1084.
525 Nevertheless, in the software industry, many proprietary companies, such as Apple, Lucent, IBM, and Intel, have motives to write their own F/OSS license. See e.g. ROSEN, OPEN SOURCE LICENSING, at 160-61; Capek, IBM’s Open-source Involvement, supra note 137, at 251-52.
526 Interview with Cohn, supra note 261.
shortcoming in contract failure theory stems from Hansmann’s focus on the demand side of public goods, rather than on the supply side.\textsuperscript{527} However, consumers’ choice of NPOs may sometimes rely more heavily on supply-side factors.

Furthermore, there are other NPOs in the commons environment that do not attempt to resolve the contractual difficulties described by Hansmann.\textsuperscript{528} For example, it is difficult to determine whether the NPOs involved in lobbying activities and public-interest litigation primarily aim to solve contract failures.\textsuperscript{529} It is also difficult to explain why some NPOs promote specific social norms or social movements in the information society. Hansmann’s theory fails to capture the fact that the stated objective of many NPOs is to respond not to private-contract failures but to government failures, especially failures pertaining to IP law design and enforcement. When NPOs emerge as a response to failures other than contract failure, the theory of government and market failure introduced in the next section, may better explain the NPO’s role of providing certain public goods.\textsuperscript{530}

\textsuperscript{527} Bacchiega & Borzaga, \textit{supra} note 104, at 31.

\textsuperscript{528} \textit{But see} Hansmann, \textit{Reforming Nonprofit Corporation Law, supra} note 10, at 523 (“\textit{w}hen contract failure is not involved, there is generally no reason to expect nonprofit firms to provide any particular advantage over profit-seeking firms.”)

\textsuperscript{529} Of course, there are still some aspects of these organizations that can be explained by typical contract failure theory. For example, the nonprofit form provides an ideal platform and indispensable trust for those who believe in the organizations’ missions and who donate to these NPOs. However, it is hard to tell purely from the theory whether these NPOs are responding to other failures, such as government failure, in addition to contract failure. I thank Professor Michael Klausner for pointing out the contract-failure aspects of these NPOs.

\textsuperscript{530} Ben-Ner & Gui, \textit{Theory of Nonprofit Organizations, supra} note 104, at 6 (stating that “NPOs may make possible advantageous transactions that cannot be carried out by FPFs [\textit{i.e.} for-profit firms], thus increasing overall efficiency to the benefit of all parties).
B. Market and Government Failure Theory

1. Theory

Another important theory proposed by Professor Burton A. Weisbrod traces the existence of NPOs back to both “market failure” and “government failure,” where obstacles limit both the private market’s and the government’s ability to provide public goods. 531 Providing public goods purely through the market will, in effect, ensure that they will be under-supplied because few consumers will volunteer to pay for products that they could enjoy at no expense. 532 Consequently, the producer will produce less of a public good than the public really needs. In traditional economic theory, this “free rider” problem is the major rationale for a government because a government can overcome market failure by taxing people to produce public goods. 533

Nevertheless, the government also encounters certain restraints as a public goods producer. In a democratic society, government will provide the public with only a limited range and a limited quantity of public goods to obtain majority support. 534 With limited resources, the government can only respond to “majoritarian interests.” 535 The limitation of the public goods means that some unsatisfied demand will persist. Certainly, some dissatisfied customers will purchase substitute, but not necessarily the same, commodities in a private market. 536 However, when the

531 WEISBROD, VOLUNTARY NONPROFIT SECTOR, supra note 113, at 52-62.
532 Id. at 57.
533 Id. at 56-57; Steinberg, Economic Theories, supra note 103, at 122.
534 See WEISBROD, VOLUNTARY NONPROFIT SECTOR, supra note 113, at 53.
535 WEISBROD, NONPROFIT ECONOMY, supra note 103, at 26; see also WEISBROD, VOLUNTARY NONPROFIT SECTOR, supra note 113, at 63 (indicating that from a historical perspective, the minority demand for goods will not be satisfied by governmental provision).
536 WEISBROD, VOLUNTARY NONPROFIT SECTOR, supra note 113, at 58.
substitute goods offered by the market do not fully meet the unsatisfied demand for collective goods, consumers can resort to NPOs. \textsuperscript{537} According to Weisbrod,

\begin{quote}
\ldots a class of voluntary organizations will come into existence as extragovernmental providers of collective-consumption goods. These organizations will ‘supplement’ the public provision (which can be zero) and provide an alternative to the private-sector provision of the private-good substitutes for collective goods. \textsuperscript{538}
\end{quote}

In summary, Weisbrod’s theory suggests that NPOs produce certain public goods desired by one or some segments of the society, but not by a majority. \textsuperscript{539} According to this theory, the more diverse a society is, the more extensive the NPO sector is likely to be. \textsuperscript{540}

2. Applications

Advocates for preserving the commons have argued that the mismanagement of commons resources is due to the invasive actions of for-profits and governments. \textsuperscript{541} According to this line of reasoning, the market and the government not only fail to provide the society with commons as public goods but also hamper the commons environment. In contrast, NPOs in the commons environment have produced various

\textsuperscript{537} Id. at 58-59.
\textsuperscript{538} Id. at 59-60.
\textsuperscript{539} Weisbrod, Nonprofit Economy, supra note 103, at 25. See also Frumkin, On Being Nonprofit, supra note 102, at 9 (stating that sometimes NPOs’ solutions to social problems are solutions that “a majority of citizens are unable or unwilling to support.”) Some political scientists also suggest that the NPO is an ideal organizational form for small-scale groups, where each member’s contribution is significant and where the free-rider problem is not serious. See Douglas, Political Theories, supra note 122, at 45. They argue that if a large number of people need certain public goods and if the free-rider problem is obvious, these people will then seek to invoke the government’s coercive power. Id. at 45-46.
\textsuperscript{540} Weisbrod, Nonprofit Economy, supra note 103, at 27; Weisbrod, Voluntary Nonprofit Sector, supra note 113, at 67-68; see also Douglas, Political Theories, supra note 122, at 46-48 (describing the diversity argument from political theories and arguing that NPOs provide their contributors with social values not shared by all, but that the government has to distribute benefits equally); Kingma, supra note 143, at 58 (summarizing researches that test Weisbrod’s heterogeneity hypothesis).
\textsuperscript{541} See e.g. Tomales Bay Institute, supra note 140, at 2.
public goods, which are provided neither by the government nor by the market. Therefore, Weisbrod’s theory may explain why many of these NPOs exist at all. Nonetheless, in a study of NPOs and the commons environment, we need to further specify the exact government failures and market failures and how the NPOs respond to them in the digital age. By doing so, we can attain a more complete understanding of both NPOs and the environment in which they are rooted. This Dissertation will identify the principal failures facing NPOs in the commons environment as well as their responses to these failures.

a. Government and Market Failures

i. Government Failure

According to Weisbrod’s theory, to satisfy diverse societal demands, NPOs have emerged as a private response, not only to market failures, but also to government failures. In this sense, his theory can explain some of the circumstances associated with government activities that are not mentioned in the contract failure theory. This theory’s application to the commons environment also resonates with the advocacy for novel institutions to replace the government as new trustees for commons resources.542

Moreover, Weisbrod’s insight into government failure is especially useful in analyzing NPOs in the commons environment, many of which were established as responses to government copyright laws.543 As Professor Dan Hunter indicates, a number of public-interest groups, including the CC, the Center for the Public Domain, 

543 See e.g. BOYLE, PUBLIC DOMAIN, supra note 2, at 182 (“Creative Commons was conceived of as a second-best solution created by private agreement because the best solution could not be obtained through public law”). Cf. Kapczynski, Access to Knowledge, supra note 78, at 854 (describing that in the international IP arena, different access-to-knowledge groups are brought together with similar problems and form coalition against IP industries).
and the Open Knowledge Network, emerged in the aftermath of the Digital Millennium Copyright Act (DMCA) and the Sonny Bono Copyright Term Extension Act (CTEA).\footnote{Hunter, \textit{Culture War}, 1113, 1116-17. The Sonny Bono Copyright Term Extension Act extended copyright terms, and the DMCA made circumvention of copyright-protection technologies illegal. Both of these pieces of legislation have attracted considerable controversy with respect to the expansion of IP protection. \textit{See e.g.} Benkler, \textit{Wealth of Networks}, supra note 2, at 413-18, 442-43; Boyle, \textit{Public Domain}, supra note 2, at 85-121; Lasica, \textit{Darknet}, supra note 74, at 34, 139-46; Lastowka, \textit{Digital Attribution}, supra note 50, at 45-46.} Other commentators also indicate that DMCA and CTEA engendered the free culture movement.\footnote{Lasica, \textit{Darknet}, supra note 74, at 30.}

There are two primary types of government failures pertaining to copyright law: the copyright law itself and its legislative process. As Sohn of PK described in an interview, “content owners have monopolies over their content. So copyright law [itself]...is a failure of government over-regulation.”\footnote{Interview with Sohn, supra note 269.} Scholars have argued that current copyright law has created unnecessary barrier for commons production and sharing activities.\footnote{See \textit{e.g.} Boyle, \textit{Public Domain}, supra note 2, at 203; Lee, \textit{supra} note 182, at 1539, 1548; Lessig, \textit{Remix}, \textit{supra} note 76, at 253; Quiggin & Hunter, \textit{Money Ruins Everything}, \textit{supra} note 62, at 243-46. \textit{See also} Loren, \textit{supra} note 54, at 272-73 (stating that copyright law fail to keep up with the creative environment enabled by new technologies), at 298 (noting the “over-propertization” of copyright law); Merges, \textit{supra} note 211, at 1181 (arguing that current IP law does not fit well with distributed creativity).} With respect to international copyright treaties, Ress of KEI attributes analogous failure to the U.S. government.\footnote{Interview with Ress, \textit{supra} note 274.} She asserts that

\[
\text{[T]he U.S. government is very committed to the wrong side. They promote a new treaty on enforcement for intellectual property rights, which is probably a bad idea. They push for extensions of copyright terms in these [Free Trade Agreements] with developing countries. They push for bad implementations of...DRM systems.}\footnote{Id.}
\]
The fact that current copyright law brought about the commons movements and the incorporation of numerous NPOs attests to Michael W. McCann’s view that law can be a resource for groups seeking to “name and to challenge existing social wrongs or injustices.”

The most common government failure associated with copyright laws is that their legislative process was captured by powerful copyright industries. Professor Jessica Litman vividly described the fact that, in the past century, the legislative process has evolved into an industry-negotiated and industry-drafted process. The industry-drafted copyright legislation tends to tilt copyright law in the direction of increasingly stronger protection. Litman suggests that the resulting copyright legislation is due to the industries’ generous campaign contributions and the government’s intrinsic incompetence. Recent examples given by Litman include the DMCA legislative

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551 See e.g. Christina Bohannan, Reclaiming Copyright, 23 CARDOZO ARTS & ENT. L.J. 567, 568 (2006) (“As a result of special-interest interest, the Copyright Act confers overly broad rights to copyright owners at the expense of the public interest in having access to creative works.”); Opderbeck, supra note 99, at 103 (asserting that “the standard narrative is that large corporate interests have been able to capture the lawmaking process of such that the law has increasingly come to favor stronger intellectual property protection”); Open Society Institute, supra note 318 (“IP policymaking processes are overwhelmed by political and professional corruption.”)
552 See Jessica Litman, Copyright, Compromise, and Legislative History, 72 CORNELL L. REV. 857, 879-88 (1987); JESSICA LITMAN, DIGITAL COPYRIGHT 23-37 (2001). See also BOYLE, PUBLIC DOMAIN, supra note 2, at 56 (stating that the copyright industries “were asked to draft the rules by which they would live”); Mark A. Lemley, The Constitutionalization of Technology Law, 15 BERKELEY TECH. L.J. 529, 532 (2000) (“Congress…seems to have abdicated its role in setting intellectual property policy to the private interests who appear before it.”)
553 Litman, supra note 552, at 53; see also Benkler, From Consumers to Users, supra note 2, at 570 (claiming that IP industry’s lobbying has caused the “ever-increasing centralization” of IP); Lastowka, Digital Attribution, supra note 50, at 49-50 (describing how well-organized entertainment companies push for stronger copyright protection via contributions to political campaigns); Lessig, Re-crafting a Public Domain, supra note 5, at 74 (being pessimistic about copyright reform today, which “protect powerful…copyright industries”); LESSIG, REMIX, supra note 76, at 39 (arguing that the content industry and the government cooperated to implement new copyright legislation from 199 to 1998).
554 LITMAN, DIGITAL COPYRIGHT, at 62, 442.
process, where established players, such as the sound recording and movie industries, exercised their considerable influence.\footnote{Regarding the detailed legislative process of the DMCA, see \textit{id.} at 122-45; \textsc{Lessig, Free Culture, supra} note 3, at 218.}

Similarly, the CTEA reflects Disney’s intense lobbying for an extension of copyrights that would protect Disney’s copyright on “Mickey Mouse.”\footnote{\textit{See Bollier, Silent Theft, supra} note 5, at 123; \textsc{Pat Choate, Hot Property: The Stealing of Ideas in an Age of Globalization} 276-77 (2005); \textsc{Heller, Gridlock Economy, supra} note 15, at 207 note 46; Hunter, at 1113; \textsc{Lessig, Free Culture, supra} note 3, at 231. \textit{See also} William Patry, \textit{The Failure of the American Copyright: Protecting the Idle Rich}, 72 \textsc{Notre Dame L. Rev.} 907, 932 (1997) (stating that “[t]he real impetus for term extension comes from a very small group: children and grandchildren of famous composers whose works are beginning to fall into the public domain, thereby threatening trust funds.”)} Although CTEA was once challenged in the U.S. Supreme Court, the court ruled that it was Congress’ decision to make.\footnote{\textsc{Eldred v. Ashcroft}, 537 U.S. 186.} If, as the \textit{New York Times} suggested, “[t]he court’s decision…does not serve the public well,”\footnote{\textsc{Editorial, The Supreme Court Docket: The Coming of Copyright Perpetuity}, N.Y. TIMES, Jan. 16, 2003, at A28.} such a decision is another government failure to protect the interests of the public. The consequence of this decision is to foster further collective action in the commons movement.\footnote{\textsc{Kapczynski, Access to Knowledge, supra} note 78, at 841-42.}

\textit{ii. Market Failure}

Market failure in the commons discourse has been the focus of many NPOs. According to Weisbrod’s theory, for-profits fail to provide certain public goods due to the free rider problem.\footnote{\textsc{Weisbrod, Voluntary Nonprofit Sector, supra} note 113, at 56-57.} Since for-profits have difficulties in profiting from producing these public goods, they will have no incentive to provide them in the marketplace. Because these public goods are crucial to certain creative activities, market failure occurs as a result of for-profits’ incapability of supplying these goods. Therefore, David Bollier writes that “[t]o defend the commons is to recognize that
human societies have collective needs and identities that the market cannot fulfill by itself.\footnote{Bollier, supra note 62, at 38.} This hypothesis resonates with the commons scenario in which NPOs are playing an increasingly important role in producing public goods. As Catherine M. Casserly of the Hewlett Foundation said, “[The NPOs’] role is to fill a gap where both for-profits exist to make money and where governments exist to provide social goods…For-profits won’t do that because there isn’t a clear revenue stream [and] because there isn’t a very clear value proposition.”\footnote{Interview with Casserly, supra note 314.}

Because contract failure is a type of market failure,\footnote{Hansmann, Nonprofit Enterprise, supra note 103, at 845.} the above-mentioned contract failures pertaining to commons can also exemplify market failures when we apply Weisbrod’s theory to the NPOs that studied here. In addition to contract failure, Richard Steinberg identifies two types of market failures that NPOs aim to correct: under-provision and over-exclusion.\footnote{Steinberg, Economic Theories, supra note 103, at 121-24.} In fact, sometimes contract failure may take place in the form of under-provision or over-exclusion. For example, access failure, which is a new type of contract failure identified in this Dissertation, occurs as a result of proprietary publishers or other enterprises’ over-exclusion of information.\footnote{See discussion supra Chapter 4 Section A.2. This over-exclusion problem is sometimes perceived as a failure of under-consumption or under-use. See e.g. Ostrom & Hess, Knowledge Commons, supra note 35, at 58 (stating the under-use problem in the context of university repositories).}

Collaborative failure takes places when the market fails to provide sufficient resources for large-scale peer-production and other collective activities. Licensing failure, resulting from the significant transaction costs imposed by the default rules in copyright law, leads to the under-provision of intellectual resources for building
culture upon the past.\textsuperscript{566} Moreover, as described in Chapter 3 Part C., the NPOs studied in this Dissertation produce certain public goods that both the government and the market have failed to provide in the first place. The society’s extensive consumption of these public goods thereafter indicates that an under-provision problem existed prior to the NPOs’ efforts, regardless of whether the function of these goods is to cure contract failure or the over-exclusion problem.\textsuperscript{567}

Under-provision problems are usually the result of the pursuit of narrow private-interest.\textsuperscript{568} Regarding intellectual resources, these problems originate when proprietary publishers fail to provide society with content that is not commercially profitable. PLoS’s co-founder Brown described in an interview how a for-profit structure would hamper his organization’s mission of building a robust commons in scientific research:

[[If we were a for-profit, that means someone is supporting us in part because they want to make a profit. Sometimes that’s going to create a conflict with what we really want to accomplish, where we’re going to have to sacrifice: take a smaller profit, or take no profit, or take a higher risk than investors would want us to take, or something like that. Because what matters to us is the goal we’re trying to accomplish, which is not to make a profit, but to change the world in a certain way…Because I don’t want someone who is investing in us for profit to be able to tell me that I have a responsibility to that person to give them a return, and do that at the expense of the things that matter for us.\textsuperscript{569}}

\textsuperscript{566} LESSIG, FREE CULTURE, \textit{supra} note 3, at 252.
\textsuperscript{567} For example, according to the CC website: “We believe there is an unmet demand for an easy yet reliable way to tell the world “Some rights reserved” or even “No rights reserved.” CC, \textit{Frequently Asked Questions: What Is Creative Commons?}, at http://creativecommons.org/faq#About_Creative_Commons (last visited May 26, 2009). The “unmet demand” perceived by Creative Commons explains the fact that this organization is producing certain public goods, that is, flexible copyright licenses, which the government and the market fail to provide. I thank Professor A. Mitchell Polinsky for bring this point to my attention.
\textsuperscript{568} WEISBROD, NONPROFIT ECONOMY, \textit{supra} note 103, at 29.
\textsuperscript{569} Interview with Brown, \textit{supra} note 339.
Moreover, since most for-profit media companies only focus on selling information for profit, they are not interested in a creative work’s *noncommercial life* or *non-exclusive-right* life that persists after a creative work’s commercial life ends.\textsuperscript{570} As a result, a significant number of creative works are not commercially available to the society.\textsuperscript{571} More importantly, access to these works is usually restricted by copyright law.\textsuperscript{572} Therefore, without a copyright owner’s permission, no one can digitalize these materials to share them with the public online. However, as Lessig points out, the non-exclusive-right life of creative work has significant social value in preserving our culture.\textsuperscript{573} Kahle of the Internet Archive elucidates the danger of losing our culture if no one digitally archives the copyrighted but out-of-print books:

> Unfortunately, this [type of books represents] most of the books that are in libraries…if we do not bring [these books] to the next generation of people growing up, they will not be able to learn from [these books] and what a library is…We will end up having abused the next generation for no reason. Because out-of-print means that it’s not commercially viable. It’s the land of the library. So we need to have libraries [such as the Internet Archive] have these materials.\textsuperscript{574}

\textsuperscript{570} Lessig, Free Culture, supra note 3, at 112-13; Lessig, Creative Economies, supra note 130, at 33-34. Nonetheless, it is still possible for for-profits to build sustainable business models based on public domain materials, for example, Google’s Google Book project, part of which provides full access to public domain books. See Lessig, Re-crafting a Public Domain, supra note 5, at 68; Peter S. Menell, Knowledge Accessibility and Preservation Policy for the Digital Age, 44 Hous. L. Rev. 1013, 1015-16, 1046-47 (2007). Lexis-Nexis and Westlaw provide electronic versions of court decisions to their subscribers. See Lessig, Free Culture, supra note 3, at 280-81.

\textsuperscript{571} See Id. at 228 (describing the results of research, that “94 percent of the films, books, and music produced between 1923 and 1946 is not commercially available”). See also Frank H. Easterbrook, Contract and Copyright, 42 Hous. L. Rev. 953, 955 (2007) (suggesting that less than 1% of copyrighted publications are commercially valuable); Wu, Authorship Policy, supra note 159, at 354-55 (“Only a tiny number of works are still actively marketed thirty-five years after assignment [to commercial distributors]).

\textsuperscript{572} Boyle, Mertonianism Unbound, supra note 35, at 126; Boyle, Public Domain, supra note 2, at 12.

\textsuperscript{573} Lessig, Free Culture, supra note 3, at 113, 225.

\textsuperscript{574} Interview with Kahle, supra note 431.
In summary, if for-profits and other creators cannot preserve the content they produce, an under-provision problem results since the content is no longer available and some of our culture will, thus, disappear.\textsuperscript{575} In this sense, the market fails to archive our culture for future generations.\textsuperscript{576}

Over-exclusion may be a more serious problem for intellectual resources than for other resources due to DRM technologies and expanding copyright legislation.\textsuperscript{577} Since free-market ideologists tend to favor the expansion of IP rights,\textsuperscript{578} the market failure of over-exclusion may occur as a result of the extreme implication of that ideology. This over-exclusion problem is actually an alternative description of the tragedy of the anticommons\textsuperscript{579} or enclosure\textsuperscript{580} described in Chapter 2 part B. Franz described Open Society Institute’s awareness of the over-exclusion problem:

in the IP area...one biggest problem we currently have is actually a problem of market failure... so our work in the IP field is very specifically trying to address those market failures. And the reason we want to address them is that because we think...the marginalized need affordable, knowledge-based goods. With trying to address these market failures, trying to think creatively about what new business models could look like in all

\textsuperscript{575} Internet Archive, supra note 298. See also Pessach, supra note 302, at 109-14 (analyzing the importance of social memory and memory institutions).

\textsuperscript{576} Internet Archive, supra note 298, LESSIG, FREE CULTURE, supra note 3, at 227.

\textsuperscript{577} See e.g. Elkin-Koren, What Contracts Cannot Do, supra note 38, at 381; LESSIG, FREE CULTURE, supra note 3, at 133-61; Open Society Institute, supra note 318. See also BENKLER, WEALTH OF NETWORKS, supra note 2, at 36 (stating “if these [IP] laws are...necessary to create the incentives for publication, the market that develops based on them will, from the technical economic perspective, systematically be inefficient”); BOYLE, PUBLIC DOMAIN, supra note 2, at 274 (introducing literature on the danger caused by “legally backed DRM”); Stiglitz, Economic Foundations of Intellectual Property Rights, supra note 62, at 1700 (describing the inefficiency caused by IP’s restriction on use of knowledge).

\textsuperscript{578} LANDES & POSNER, ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY, at 414. See also BOLLIER, SILENT THEFT, supra note 5, at 121 (arguing that the IP regime has “morphed into a market protectionist system”); BOYLE, PUBLIC DOMAIN, supra note 2, at 199 (describing the viewpoint that more IP leads to more innovation).

\textsuperscript{579} See supra Chapter 2 Part B.1. Professor Hunter calls it “the digital anticommons” problem. See Hunter, supra note 43, at 500-504.

\textsuperscript{580} See supra Chapter 2 Part B.2.
areas: music, pharmaceuticals and so on and so forth, we hope eventually, which is [Open Society Institute’s] most important goal, that the marginalized will be able to participate, be able to have access to drugs, be able to have the textbooks they need to learn and so on and so forth. 581

James Love of KEI similarly explains the organization’s concentration: “we focus on… areas where exclusive rights leads to either excessive prices or restrictions on the freedom of people to innovate.” 582 This line of description can be applied to various other NPOs in the commons realm as well.

The over-exclusion problem is closely tied to the for-profit sector which owns abundant intellectual resources. 583 For most proprietary media businesses, the exclusion is desirable because it helps to extract additional profits from consumers 584 and to compete with newcomers in the market. 585 As Elspeth A. Revere, Vice President of the John D. and Catherine T. MacArthur Foundation, said, “[t]he content industries are very much trying to protect their old business models and want to see the technology…limit access to content.” 586 Therefore, for-profit incumbents usually

581 Interview with Franz, supra note 273.
582 Interview with Love, supra note 275. Cf. Lemley, supra note 64, at 1958-62 (identifying various costs of overbroad IP rights); Lunney, supra note 343, at 497-98 (noting that “deadweight loss” happens when consumers are not willing to pay for copyrighted works).
583 See HAROLD, OURSPACE, supra note 96, at 136-37. See also BOLLIER, SILENT THEFT, supra note 64, at 112-13 (describing how for-profits enclose information and restrict public use of it). Cf. John F. Burns, Tradition in India vs. a Patent in the U.S., N.Y. TIMES, Sept. 15, 1995, at D4 (discussing whether genetic resources should be maintained as shared commons or be privatized by a few corporations as their IP).
584 See LASICA, DARKNET, supra note 74, at 23-29 (describing how the entertainment, software, and hardware industries acted jointly to restrict the public’s use of information).
585 Cf. BENKLER, WEALTH OF NETWORKS, supra note 2, at 2 (stating that the new nonproprietary information production model “threatens the incumbents of the industrial information economy.”)
586 Telephone Interview with Elspeth A. Revere, Vice President, General Program, John D. and Catherine T. MacArthur Foundation (Oct. 3, 2007) [hereinafter Interview with Revere].
do not have sufficient incentives to open their proprietary information to public creative activities.\textsuperscript{587}

Instead, these incumbents tend to criticize the virtue of commons production models\textsuperscript{588} and to use exclusion to resist the new ways of commons production.\textsuperscript{589} Although a commercial “celestial jukebox” can similarly provide a variety of digital information on demand,\textsuperscript{590} consumers’ are not permitted to freely use such proprietary information to produce other creative works.\textsuperscript{591} As Benkler points out, to maximize their profits, for-profit companies have systematically restricted individuals’ freedom of producing information.\textsuperscript{592} Consequently, market failure occurs in the form of over-exclusion, which only allows a few powerful media companies to create the culture.\textsuperscript{593} Furthermore, this failure has an anti-competitive effect due to for-profit incumbents’ dictatorship over the possibility of individual creative activities in cyberspace.\textsuperscript{594}

\textbf{b. NPOs’ Response to Government and Market Failures}

\textsuperscript{587} See Lessig, \textit{Free Culture}, supra note 3, at 106-07; see also Bollier, \textit{Commons Movement}, supra note 54, at 2, 6 (indicating that corporate control and privatization pose a significant threat to commons resources).


\textsuperscript{589} Benkler, \textit{Wealth of Networks}, supra note 2, at 23; Frischmann, \textit{Cultural Environmentalism}, supra note 86, at 1109-10, 1118, 1120. See also Bollier, \textit{Silent Theft}, supra note 5, at 112 (describing how Microsoft resists F/OSS development); Lessig, \textit{Remix}, supra note 76, at 150 (“the content industry…wages war against…sharing economies.”)

\textsuperscript{590} Professor Paul Goldstein has long envisioned such a “celestial jukebox,” which connects the subscriber to a storehouse of information and content that the subscriber will pay for and receive. He foresaw the emergence of technologies to enable copyright owners to charge users differently based on the value of each element of a work that is used. See Goldstein, \textit{supra} note 133, at 187.

\textsuperscript{591} Furthermore, proprietary entertainment companies may face certain obstacles in building a commercial celestial jukebox due to disincentive, copyright laws, and their own proprietary culture. See Lasica, \textit{Darknet}, \textit{supra} note 74, at 42-44.

\textsuperscript{592} Benkler, \textit{Wealth of Networks}, \textit{supra} note 2, at 25.

\textsuperscript{593} Lessig, \textit{Re-crafting a Public Domain}, \textit{supra} note 5, at 64. \textit{Cf} Boyle, \textit{Public Domain}, \textit{supra} note 2, at 239 (“Markets would \textit{routinely} fail to make activities internalize their own costs…This failure would, routinely, disrupt or destroy fragile ecological systems, with unpredictable, ugly, dangerous, and possibly irreparable consequences.”)

\textsuperscript{594} Benkler, \textit{Wealth of Networks}, \textit{supra} note 2, at 28. See also Wu, \textit{Authorship Policy}, \textit{supra} note 159, at 353 (noting that occasionally incumbents use copyright to prevent competition and potential market entry).
Lessig identifies four factors that constrain or enable human behavior: the law, norms, the market, and architecture.\footnote{Lawrence Lessig, \textit{The New Chicago School}, 27 J. LEGAL STUD. 661, 662-70 (1998); \textit{LESSIG, FREE CULTURE}, supra note 3, at 121-22; \textit{LESSIG, CODE 2.0}, supra note 3, at 122-25} Government may use each of these regulators to achieve its policy goals.\footnote{\textit{LESSIG, CODE 2.0}, supra note 3, at 125-32.} Similarly, NPOs may respond to certain government or market failures via these four types of constraints. Below I illustrate how NPOs use these tools to correct or mitigate government and market failures described previously.

\textit{i Law}

Since copyright law and its captured legislative process are the primary causes for government and market failure in the information society, it is no surprise that some NPOs exist to influence copyright legislation. For example, PK was established as a response to copyright lobbying activities.\footnote{Actually, in the 1980s and the 1990s, there were already consumer groups lobbying to protect the personal use of copyrighted materials. Pamela Samuelson, \textit{Toward a “New Deal” for Copyright in the Information Age}, 100 MICH. L. REV. 1488, 1500 (2002).} This organization works to preserve intellectual commons and to expose related market failures by documenting which segments of the general public are trying to influence specific legislation.\footnote{See Mohtadi & Roe, supra note 278, at 455-54.} Since the government is not always perfectly informed regarding its policymaking, it may fail due to the significant information costs in the decision-making process.\footnote{\textit{Kieff, Coordination, Property, and Intellectual Property}, supra note 131, at 365-66.} PK may correct such failure, to some extent, by providing important information to the government regarding certain legislation, which would otherwise be unavailable.\footnote{See Mohtadi & Roe, supra note 278, at 455; \textit{FRUMKIN, ON BEING NONPROFIT}, supra note 102, at 30. To this end, PK also collaborates with other NPOs, such as the EFF. As PK’s President Sohn explained in an interview,

\begin{quote}
What we try to do is…to work with those organizations like the EFF…and move on. They have grassroots. So
\end{quote}
we provide the content and they’ll provide the network. We’ll seek out organizations that have grassroots presence and we’ll activate them.\textsuperscript{601}

Nonetheless, the impact of NPOs’ advocacy efforts is often difficult to evaluate.\textsuperscript{602} Organizations such as PK still face difficulties translating public concerns into legislative actions. According to Sohn,

\begin{quote}
[T]he toughest challenge is building a grassroots movement in support of copyright reform…sort of subsequence of that is getting affirmative legislation passed. It’s not that difficult to stop legislation from passing, but much more difficult to get something passed. We need to bring balance back to copyright and that’s not going to happen unless there’s some legislation passed at some point. Those are intertwined because unless you have a really strong constituency base for copyright reform, it’s not going to happen. The opposition is too powerful. That’s the problem. You have Hollywood, recording industry, Microsoft. You know the business. They’ll all be against just about anything that we do in this area.\textsuperscript{603}
\end{quote}

Given the obvious difficulty of convincing the Congress to pass ideal legislation, litigation has emerged as an alternative to prevent the overexpansion of IP rights.\textsuperscript{604} Therefore, NPOs, such as the EFF, have sought to provide remedies for the public in court. As Cohn of EFF said, “we…use the power of our litigation strengths to create

\begin{quote}
\textsuperscript{601} Interview with Sohn, \textit{supra} note 269. See also Interview with Ress, \textit{supra} note 274 (describing KEI’s similar strategy in producing information and interest various groups to join its campaign).
\end{quote}

\begin{quote}
\textsuperscript{602} \textit{FRUMKIN, ON BEING NONPROFIT}, \textit{supra} note 102, at 53.
\end{quote}

\begin{quote}
\textsuperscript{603} Interview with Sohn, \textit{supra} note 269. Cohn of the EFF similarly said in an interview that “unfortunately, what we end up doing in Congress is that we don’t actually often get to help make good things happen, but we’ve spent most of our time trying to knock down bad things, stop bad things.” See Interview with Cohn, \textit{supra} note 261. See also Lessig, \textit{Re-crafting a Public Domain}, \textit{supra} note 5, at 74 (expressing similar pessimistic viewpoints of copyright reform).
\end{quote}

\begin{quote}
\end{quote}
space for the intellectual commons so that people can really engage and remix culture without fear of lawsuits and create that space.”

Other NPOs, such as the FSF and CC, are involved in “private law”-enacting activities. By providing creators with non-exclusive licenses, these organizations are building a broader scope of commons for creative activities. The FSF-designed GPL has acquired a reputation as a contractual mechanism “cutting back” the scope of background IP rights. Similarly, CC, established in the aftermath of the Eldred v. Ashcroft case, is a more obvious example of a private response to the imperfect copyright system. CC deems current copyright law to be a major obstacle to creative activities and seeks to change the default rule it created. By providing flexible licenses (private license arrangements) to authors who wish to share their works, CC aims to eliminate the obstacles and create “a layer of reasonable, flexible copyright in the face of increasingly restrictive default rules.” The CC licenses provide freedoms beyond those promised by the “fair use” doctrine in current copyright law.

All the licensing arrangements are not only tools to fix the tragedy of the anticommons but also a species of private ordering that provide some social-welfare balance to the expansion of these interests without destroying private property.

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605 Interview with Cohn, supra note 261.
606 LESSIG, CODE 2.0, supra note 3, at 199.
608 Eldred v. Ashcroft, 537 U.S. 186 (2003). In this case, the Supreme Court affirmed the constitutionality of the CTEA, which extends the copyright terms for both existing works and new works by 20 years.
609 Elkin-Koren, What Contracts Cannot Do, supra note 38, at 379. See also LESSIG, REMIX, supra note 76, at 278-79 (claiming that CC can function as a private copyright law reform).
611 LESSIG, FREE CULTURE, supra note 3, at 283.
612 HELLER, GRIDLOCK ECONOMY, supra note 15, at 197.
For NPOs that provide free licensing arrangements, it is also crucial to continuously improve their licenses so that these legal arrangements can meet the evolutionary demands of the commons communities. As Ostrom and Hess stated, effective institutions for commons production and use depend partly on “the continual design and/or evolution of appropriate rules.”613 This is why both FSF and CC have endeavored to release new versions of their licenses. Sullivan from the FSF explained the importance of the organization’s releasing new versions of the GPL:

The world around us has changed, so the things that we have to deal with changes in technology, and things like releasing the update of the GPL in order to respond to things like patents and DRM, and the international nature of free software… when it does need to be done, I think it is a really important function for us. Having it be the same organization means that all of the knowledge and everything that went into drafting these licenses is carried on in the organization. So we’re not going to re-make a mistake that was corrected years ago, because we were around for the drafting of the first version. So I think having the same organization be responsible for it provides an important sense of continuity.614

In the United States, foundation funds have been channeled to advance policy analysis in various social science disciplines.615 Therefore, it is no surprise that several NPOs provide financial grants to other institutions involved in public or private copyright law reform. These grant-making organizations usually have their own conceptions of the ideal copyright system and the ideal public domain. It is on the basis of their ideals that the NPOs make decisions about grants. For example, the John D. and Catherine T. MacArthur Foundation’s Vice President Revere said that

613 Ostrom & Hess, Knowledge Commons, supra note 35, at 43.
614 Interview with Sullivan, supra note 207.
615 Prewitt, supra note 143, at 368-69.
These grant-making foundations attempt to influence the law by sponsoring research on the subject of the public domain. For example, the MacArthur Foundation supports work in the IP and the public domain areas because the foundation senses “the amount and quality of information available for free and uncontrolled use will actually decrease.” In talking about the role of grant-making foundations, Fascher of the Hewlett Foundation said, “[an NPO] can’t directly affect legislation, but [it] can support research and seek that research to be disseminated to people that do make policy.” In general, these NPOs desire to use grants to effectively correct government and market failures resulting from expanding IP laws.

**ii Other Regulators**

Other effective ways to correct government and market failure, in addition to the law, are social norms, the market, and architecture. These four modalities of constraints are interdependent. By introducing and encouraging the use of non-exclusive licenses, advocacy groups, such as CC, FSF, and OSI, are promoting a social norm of information-sharing and information-reuse. OSI has promoted a social norm that bridges the gap between hackers and the commercial world, which is

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616 Interview with Revere, supra note 586.
617 See text accompanying note 316.
618 MacArthur Foundation, supra note 317.
619 Interview with Fascher, supra note 433.
620 LESSIG, CODE 2.0, supra note 3, at 124; SUNSTEIN, INFOTOPIA, supra note 56, at 180.
621 See e.g. Elkin-Koren, What Contracts Cannot Do, supra note 38, at 394-95; Lee, supra note 182, at 1540-41. See also Benkler & Nissenbaum, Commons-based Peer Production, supra note 399, at 412 (noting the norm of knowledge sharing in F/OSS projects).
essential to for-profits’ involvement in F/OSS development. According to its board
member Cooper,

[F]rom an awareness perspective,…we have explained a
lot of stuff to a lot of companies to create those bridges. We’ve explained some stuff to some hackers as well…
OSI… gave developers a way to feel comfortable about
the entrance of corporations into the open source world. By helping to educate corporations about open source
licensing and why the choices we made were made, by
holding [open source licensing] to standard, we gave the
developer the opportunity to feel comfortable and not
have to become a lawyer, which is important…what we
did was create an easy way for developers in the
community to feel comfortable about at least the
licensing terms under which things were coming at them
from corporations.622

Other NPOs, such as EFF, Open Society Institute, and PK, shed light on
government and business activities by publishing reports and studies that are designed
to awaken public opinion. The information produced by these NPOs has provided
essential foundations for building new norms in the commons movement as well. Since grant-making foundations have provided central funding for the whole
commons movement, their values and commitment have played an increasingly
important role in shaping these norms. Moreover, the success of PLoS has influenced
scientific funding agencies’ norm of grant making. The organization’s co-founder and
board member Brown elucidated the shift of such norms:

Having established that open access publication can be
good and also just pressuring the funding agencies and
arguing with them all the time about why it’s in their
interest to support open access…[This] has moved the
line of statement so that a lot of a funding agencies are
shifting their policy steadily more and more close to
open access and they’ll get there.623

622 Interview with Cooper, supra note 166.
623 Interview with Brown, supra note 339.
Therefore, by fostering a new culture and norms regarding the control over digital information, NPOs may occasionally constrain government regulation and business practice in our social life.\textsuperscript{624}

According to Lessig, architecture is the natural or human-built environment that constrains or facilitates human behavior.\textsuperscript{625} In cyberspace, software and hardware are both architecture that has regulatory effects.\textsuperscript{626} Numerous NPOs have built architecture to preserve the commons environment. For example, PLoS, MIT and other academic institutions have provided access to valuable scholarly information. Internet Archive and similar organizations create digital artifacts that preclude our cultural memory from fading.\textsuperscript{627} F/OSS foundations, Wikimedia Foundations, and the Project Gutenberg Foundation have compiled essential infrastructure resources for collaborative commons production. Through the promotion of flexible licenses, the CC has transferred a substantial amount of content into a common pool to provide infrastructure resources for widespread creative activities.\textsuperscript{628} As Godwin of the Wikimedia Foundation said,

\begin{quote}
[T]he role of nonprofits is in effect to try to make sure that the intellectual commons is continually reseeded and revitalized and replenished with an influx of new creative works. Just trying to make sure that the village
\end{quote}

\textsuperscript{624} Cf. Frumkin, On Being Nonprofit, supra note 102, at 58 (describing how NPOs build international norms to influence the behavior of governments and businesses).

\textsuperscript{625} Lessig, The New Chicago School, supra note 595, at 663; Lessig, Code 2.0, supra note 3, at 121, 123.

\textsuperscript{626} Lessig, Code 2.0, supra note 3, at 121, 123, 124-25.

\textsuperscript{627} See e.g. Internet Archive, supra note 298.

\textsuperscript{628} See e.g. Boyle, Public Domain, supra note 2, at 183, 244; Carroll, supra note 292, at 48; Lessig, Free Culture, supra note 3, at 282; Loren, supra note 54, at 298. See also Harold, OurSpace, supra note 96, at 149 (noting that CC’s strategy is more focused on the amplification than on the scarcity of intellectual resources); Zittrain, Future of the Internet, supra note 151, at 79 (arguing that CC licenses contribute significantly to “content-level generativity”).

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commons gets farmed and planted and weeded and fertilized and so on.\footnote{Interview with Godwin, supra note 336.}

Moreover, through the production of licenses and architecture, NPOs have reshaped the market for online information. In the past, the use of information was constrained by considerable legal costs and uncertainties.\footnote{Lessig, Re-crafting a Public Domain, supra note 5, at 58.} Now, through non-exclusive licenses and free access to once-costly information, a variety of intellectual resources have become commons that are “free” for use.\footnote{HAROLD, OURSPACE, supra note 96, at 162; Lessig, Architecture of Innovation, supra note 37, at 1788.} Businesses are also able to explore new profit opportunities with free licenses, such as CC.\footnote{See e.g. Loren, supra note 54, at 302.} With CC license, PLoS has exemplified how an NPO has reshaped the market of scientific journals. According to Brown,

[PLoS] has helped… the scientific community…that never even thought about the possibility of open access to just be aware of it and appreciate it and start to understand it and that has definitely activated, at least in the biomedical world, a lot of scientific community to come around to realizing that that’s something that they want. So it’s shifted kind of the expectations and the demands of the market for scientific publications…it’s…shifting the market’s expectations more and more toward expecting open access, thinking that that’s really what we all want.\footnote{Interview with Brown, supra note 339.}

In summary, these NPOs help to correct under-provision and over-exclusion failures through “a model of property based more on amplification than scarcity.”\footnote{HAROLD, OURSPACE, supra note 96, at 149.}

3. Theoretical Implications
Through the application of contract failure theory and market and government failure theory, it is not difficult to see the different focuses in explaining the NPO phenomenon. Contract failure theory highlights NPOs’ unique behavior, whereas market and government failure theory’s focal point is the origins of various NPOs. Compared to contract failure theory, market and government failure theory can encompass a much broader spectrum of NPOs.

Weisbrod argues that the non-distribution constraint would prevent NPOs from engaging in privately-profitable, but socially-insufficient activities.\textsuperscript{635} Therefore, NPOs “tend to engage in more activities that provide more external (uncaptured) social benefits and in fewer activities that impose external costs.”\textsuperscript{636} In subsequent sections, this Dissertation provides some implications of Weisbrod’s theory and its limitations in the commons context.

\textbf{a. Social Experimentation}

Based on NPOs’ response to government and market failures, we found that some NPOs have provided resources for social experimentation. Since governments sometimes are not allowed to use taxpayers’ money to make new policies on the basis of trial and error,\textsuperscript{637} NPOs can fill the role of experimenters for future policymakers.

\textsuperscript{635} Weisbrod, \textit{supra} note 104, at 72.
\textsuperscript{636} Id. at 75. See also Galaskiewicz & Bielefeld, \textit{supra} note 103, at 206 (making similar arguments regarding the additional effects of the non-distribution constraint).
\textsuperscript{637} Of course, if circumstances permit, the government itself still conducts certain social experiments for future policymaker in arenas such as education. See e.g. Alice M. Rivlin & P. Michael Timpane, \textit{Introduction and Summary, in Ethical and Legal Issues of Social Experimentation} 1, 1 (Alice M. Rivlin & P. Michael Timpane ed., 1975); Edward M. Gramlich & Larry L. Orr, The Ethics of Social Experimentation, \textit{in Ethical and Legal Issues of Social Experimentation} 105, 105-08 (Alice M. Rivlin & P. Michael Timpane ed., 1975); Alexander Morgan Capron, Social Experimentation and the Law, \textit{in Ethical and Legal Issues of Social Experimentation} 127, 143-46 (Alice M. Rivlin & P. Michael Timpane ed., 1975). I thank Professor Deborah Hensler for making this point and directing relevant literature to me.
Then, more often than not, governments do implement new policies that imitate successful NPO programs.\textsuperscript{639}

From history, we know that it is not uncommon for NPOs to support such social experimentation financially. For example, the Rockefeller Foundation sponsored remedial social and economic sciences in England during the interwar years, because it believed that the levels of poverty and unemployment were misinterpreted.\textsuperscript{640}

Likewise, NPOs using their funds to stimulate commons development recognize that there is something fundamentally wrong or insufficient about government policy toward creative activities.\textsuperscript{641} For example, the Open Society Institute has aimed to influence the policy outcome through funding a series of experimentation. According to its explanation with respect to grant-making,

\begin{quote}
[It] provide[s] direct support for experimentation with new models, when individual experiments break new ground or could demonstrate the viability of an untested model. Such demonstrations are valuable on their own terms, but are further essential to policy interventions as they will, in the form of ‘proof of concept,’ contribute to governments more openly embracing new models as an integral part of their knowledge governance policies.\textsuperscript{642}
\end{quote}

PLoS has successfully influenced the funding policy of National Institutes of Health (NIH) through its experiment on open access publishing. Starting from 2005, NIH, the largest funder of science research in the U.S. federal government, requires every scientist who receives an NIH research grant, and who publishes the result in a

\begin{footnotes}
\footnote{See Frumkin, On Being Nonprofit, infra note 102, at 26, 32. See also Dimaggio & Anheier, Sociology of Nonprofit Organizations, supra note 16, at 151 (noting that NPOs “enlarge the menu of models among which policy makers may choose when experimenting locally with solutions to social ills”); Douglas, Political Theories, supra note 122, at 48-49 (using the example of governments’ follow-up support for the “green revolution” initiated by the Rockefeller Foundation).}
\footnote{Frumkin, On Being Nonprofit, supra note 102, at 32.}
\footnote{Douglas, Political Theories, supra note 122, at 49.}
\footnote{See supra text accompany note 661-618.}
\footnote{Open Society Institute, supra note 318.}
\end{footnotes}
peer-review journal, to deposit a digital copy of the article in PubMed Central (PMC).\textsuperscript{643} PMC will then provide free online access to its copy some time after the article is published in a journal.\textsuperscript{644} Brown of the PLoS has described in an interview how the organization influenced NIH’s policy regarding public access to NIH-funded research:

[W]e’ve shown that we can survive using the open access business model... So that takes away another argument against open access, which people say there’s no sustainable financial model for open access... We definitely influence the NIH policy both directly and indirectly when we’ve talked to people at the NIH a lot. We’ve talked to people in Congress or the ones that set the policy... So we have directly influenced the policy change... the people behind PLoS have been involved in doing this.\textsuperscript{645}

Many other NPOs aim to influence government policy through their social experimentation as well. For example, based on its own experience with a digital archive, the Internet Archive has assisted governments to take action in preserving the digital culture. According to Kahle of the Internet Archive,

[G]overnment support is going to be critical... We seem to have had a lot of impact [on government actions of preserving digital culture]. We work not only with the U.S. government, but governments from around the world... We work with first 12 national libraries, and now I believe it is up to 40 national libraries. We supply tools and technique. If they want services, they can pay us to do the calling on their behalf. This has helped move many national libraries forward.... In our case and experience, the Internet Archive plays a role and allows the government officials to get involved without taking too much responsibility. And sometimes they will want

\textsuperscript{644} Id.
\textsuperscript{645} Interview with Brown, supra note 339.
to take it on themselves, but we find sometimes they just want to keep it going.\footnote{Interview with Kahle, \textit{supra} note 431.}

In order to avoid the threat to the collaborative process that produce the F/OSS, the FSF has advocated a top-down legal change regarding software patent. Through the anti-software-patent campaign, the FSF aims to demonstrate to policymakers the potential innovation opportunities arising in the absence of software patents via its free software experiment. As Sullivan of the FSF states in an interview:

Some of the things that we try to demonstrate [to policymakers] are the way that free software promotes innovation because the main argument that people make in favor of software patents is that if we don’t have them, then we won’t have an incentive for people to invent things. So I think just pointing to the whole world of free software and, we have made some efforts in the past to organize a list of those innovations… one other thing that we work to demonstrate to lawmakers is that this isn’t a problem of companies’ getting awarded patents that they shouldn’t have because the inventions are obvious or something like that. It’s just actually a problem with the whole idea of having patents on software.\footnote{Interview with Sullivan, \textit{supra} note 207.}

The Hewlett Foundation has invested substantially in open textbooks for K-12 students and other OER projects.\footnote{Interview with Casserly, \textit{supra} note 314.} What the Foundation attempts to achieve by making OER-related grants is to force the government to recognize OER’s value from a policy perspective. According to Catherine M. Casserly, Program Officer of the Foundation’s Education Program,

\begin{quote}
The Foundation will invest in it for a while…But ultimately for it to really be successful, government needs to see the values of OER…I think it would really be kind of [useful to have] examples and demos, and then the government will pick it up…We have
\end{quote}
The ccLearn Project under CC utilizes a similar strategy to influence government policy through grassroots OER actions. As Bissell stated,

[ccLearn’s] burden now is to bring the project up to scale, get it to go to all different types of disciplines, across all grade levels and get it incorporated in the educational system...I think that’s kind of the model that we are depending on. We are assuming that in all parts of the world, there will be enough grassroots actions based on creative kernel of content in the education system, and at some point the government starts to notice.650

Therefore, the way that Hewlett Foundation and ccLearn respond to government failure is to prove OER’s value through a set of social experiments. These two organizations believe that the result of these experiments will provide policymakers with essential information that is unavailable through the traditional and formal policymaking process.

The most ambitious NPO project in the commons environment with the goal of changing the law through social experimentation is probably CC,651 which aims to help IP policymakers understand authors’ desire to control their creative works as well as the importance of the public domain to various creativities.652 As CC’s founder

649 Id.
650 Interview with Bissell, supra note 347.
651 Interview with Franz, supra note 273 (“Creative Commons is a brilliant example for an experiment.”)
652 LESSIG, FREE CULTURE, supra note 3, at 283-86.
Lessig states: “[the] lesson [from CC] may help policy makers re-craft copyright law in the future.” Through the private reform initiated by CC, Lessig desires to “awake recognition of the need for [public] reform.” He envisioned that only when the free culture movement promoted by CC has gained significant public support will Congress be more likely to engage in copyright legislative reform to protect the freedom of the general public.

b. Balanced IP Policymaking Process

IP laws concern interests far beyond those of the copyright industries, and IP policy is more about “a matter of balance” than about the “maximization of rights.” Given the captured legislative process and the increasing IP protection for right-holders, some researchers assert that current IP lawmaking process has been systematically unbalanced.

Because of the imbalance in favor of copyright industries, political advocacy NPOs such as PK and EFF have emerged to ensure that a broader set of interests is represented in the IP policymaking process. Officers from these NPOs similarly expressed their organizations’ mission with respect to the preceding imbalance. For example, PK’s co-founder and President Gigi B. Sohn emphasized the fact that PK

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653 LESSIG, CODE 2.0, supra note 3, at 199. See also LESSIG, REMIX, supra note 76, at 279 (“CC is just a step to rational copyright reform, not itself an ultimate solution). 
654 Lessig, Re-crafting a Public Domain, supra note 5, at 74. 
655 LESSIG, FREE CULTURE, supra note 3, at 275, 286. 
656 Boyle, Cultural Environmentalism, supra note 7, at 14-15. See also Open Society Institute, supra note 318 (“A health knowledge ecology…based on a balance between private property rights and the commons.”) 
657 See e.g. Benkler, supra note 604, at 165; Kapeczynski, Access to Knowledge, supra note 78, at 839-40. See also Boyle, PUBLIC DOMAIN, supra note 2, at 239 (stating that one of the primary goals of the commons movement is to make careful, balanced suggestions); Quiggin & Hunter, Money Ruins Everything, supra note 62, at 209 (“various industries…came to lobby governments and have a disproportionate influence over the development of intellectual property policy.”)
aims to ensure “an open and balanced Internet and balanced copyright laws.” ⁶⁵⁸ Cohn of the EFF stated the organization’s viewpoint regarding copyright policy is that “copyright [has] really gotten far out of balance” because “the content industries have a very loud voice against the government…but there’s nobody there talking for ordinary people.” ⁶⁵⁹ Therefore, EFF’s role is to “[look] more for balance with policymaking and the law, the application law, the courts.” ⁶⁶⁰

In addition to political advocacy NPOs, some grant-making foundations are concerned about the unbalanced conversation in the copyright policymaking process as well. For example, the Open Society Institute aims to foster a “healthy knowledge ecology—one based on a balance between private property rights and the commons” because the institute is aware that there is “a global expansion of the rights of intellectual property owners without comparable implementation of the rights of the users.” ⁶⁶¹ Its Manager of the Information Program Vera Franz said:

we [OSI] are trying to sort of tell the government to do things better, to create policies that better reflect the interests of larger populations and, in particular, marginalized populations…we think in the IP field, the government has been listening more to IP-based industries, pharmaceutical industry, music industry and probably publishing…So we’re saying again this is not how things should be and we try to rebalance the government actions through influencing them. ⁶⁶²

Similarly, Revere of the MacArthur Foundation expresses the Foundation’s concern regarding the imbalanced IP policymaking,

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⁶⁵⁸ Interview with Sohn, supra note 269.
⁶⁵⁹ Interview with Cohn, supra note 261.
⁶⁶⁰ Id.
⁶⁶² Interview with Franz, supra note 273.
On the government, at least in this country… the content industry has been a very vocal constituent… [we]… thought there were other voices that government should listen to beside just content industry… We are looking for a policy process that has more voices in it. We are looking for policy outcomes that do not overly favor one side or the other… What we would say toward ourselves is that in order for there to be robust, better, or balanced public debate about these issues, we need to have institutions or resources looking toward at the public-interest side of the questions, because the corporations resources were already used to looking into the other side of these questions.663

In 2003, James Boyle suggested that “We need a change in the way that these [IP] issues are understood, a change that transforms even our perception of self-interest, making possible a coalition where none existed before.” Boyle’s expected change has taken place through NPOs’ efforts to voice interests other than the copyright industries, which suggests that both government failure and market failure existed in the past IP policymaking process.664 These NPOs have not only changed the nature of IP policy debate665 but also proved Frumkin’s argument that their rise contributes to “opening up societies and giving people a voice and a mode of collective expression that has…been suppressed.”666 Moreover, by expressing the needs of their members, constituents, and the broad public, various NPOs associated with the commons movement echo J. Craig Jenkins’s argument that NPOs can

663 Interview with Revere, supra note 586.
664 See Boyle, Cultural Environmentalism, supra note 7, at 14 (noting that “[t]en years ago, civil society had little to offer in terms of groups that represented anything other than an industry position on intellectual property.”)
665 See e.g. Interview with Bollier, supra note 140. Cf. FRUMKIN, ON BEING NONPROFIT, supra note 102, at 166 (“[b]y opening the public sphere to people whose interests have been underrepresented or ignored, nonprofit and voluntary civic and political action aims at generating change.”)
666 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 1-2. See also Enjolras, supra note 405, at 363 (stating that NPOs provide platforms “where ‘voice’ is possible.”)
promote public interests by “ensuring greater pluralism in terms of political and social representation.”

**c. Empowerment to Individuals**

Individuals play a crucial role in the commons environment. In the F/OSS communities, a contributor’s personal identity is usually much more important and visible than the business with which he or she is affiliated. Individuals autonomously participate in F/OSS communities as human beings, rather than as business entities. Such phenomenon may be understood via Behlendorf’s explanation of individuals’ central role in the Apache project:

> [A]s developers in our project, we’ve always represented ourselves. We might be employed by a company here or a different company there, but when we were working together on code, it was Brian Behlendorf; it was people as individuals. And even if somebody left one company and joined another, they didn’t change their status on the projects.

In other commons scenario, individuals are in the center of production activities as well. According to David Bollier,

> [The commons is] more culturally associated with individual citizens and human beings than government and market, which tend to be more representative of the investor class or of those who control the government power, military or economic. Citizens have a great

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668 Tapscott & Williams, *Wikinomics*, supra note 137, at 80.

669 Id.

670 Interview with Behlendorf, supra note 216.
natural amenity for the commons because it’s more accessible and controllable by them.671

Given the aforementioned government and the market failures in serving individuals’ needs as participants in our information society, NPOs seem to be an ideal type of formal organization that collaborates with individuals in the commons arena. As in other philanthropic settings,672 NPOs in the commons discourse link individuals with common interest and transforms individual concerns into collective actions. Therefore, various NPO activities represent an affirmation of individual values and beliefs.

Researchers have found that NPOs have provided individuals “with a sense of empowerment…[allowing] them to share information, and enabled them to build connections through networks.”673 Based on such belief, I argue that empowerment is the primary approach for the NPOs to built themselves as an unparallel sector in the commons realm. Although digital technology has enabled individuals to make our culture and the information environment,674 NPOs have further empowered them via the provision of resources that facilitate their participation in the creative activities, policymaking process, and litigation.

Because several NPOs recognize the value of individuals as the primary sources of creativity in cyberspace, they have provided infrastructure resources to empower

671 Interview with Bollier, supra note 140.
672 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 29.
673 Id. at 42.
674 See e.g. Jack M. Balkin, Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society, 79 N.Y.U. L. REV. 1, 37 (2004), Benkler, From Consumers to Users, supra note 2, at 562; BENKLER, WEALTH OF NETWORKS, supra note 2, at 99; Cooper, From WiFi to Wikis and Open Source, supra note 21, at 137; Frischmann, Cultural Environmentalism, supra note 86, at 1120; Lessig, Creative Economies, supra note 130, at 37; LESSIG, REMIX, supra note 76, at 98, 103; Sunder, IP3, supra note 79, at 276-77.
individuals to participate in the commons activities.\textsuperscript{675} For example, the Wikimedia Foundation has empowered individuals worldwide to contribute to the largest encyclopedia in the world. It allows marginalized individuals to bring their knowledge to the front and center of cultural production.\textsuperscript{676} Ordinary people are empowered to be active creators rather than passive receptors of the culture.\textsuperscript{677}

ASF goes even further to emphasize the fact that only individual can participate as board, officers, members, or contributors in these organizations.\textsuperscript{678} Schmidt believes that one factor in ASF’s success is that “it focuses on meritocracy, consensus decision-making, and anything by individuals.”\textsuperscript{679} The empowerment to individuals in creative activities is probably best exemplified in the free culture movement. As Cohn of the EFF described in an interview,

> The free culture movement shows that there’s just a tremendous pent-up excitement in ordinary people to be able to be creators and not just the passive audience but actually the creators of their own culture, being able to take the pieces of their culture and rip it and mix them up, and make new things. I think we’re living in a very exciting time where all of these energies have been unleashed...People aren’t going to...become couch potatoes, ...[or] want to receive media created for them by big companies in the sky and fed to them over their screens. Those days are gone.\textsuperscript{680}

\textsuperscript{675} Cf. BENKLER, WEALTH OF NETWORKS, supra note 2, at 99 (noting that digital technologies have made it possible that “inputs necessary to effective productive activity are under the control of individual users”).

\textsuperscript{676} Quiggin & Hunter, Money Ruins Everything, supra note 62, at 224.

\textsuperscript{677} Cf. BENKLER, WEALTH OF NETWORKS, supra note 2, at 213 (noting that individuals are empowered to act as active speakers, rather than passive readers or listners); Quiggin & Hunter, Money Ruins Everything, supra note 62, at 215 (digital technologies empowers individuals to become readers, not pure writers, of digital content).


\textsuperscript{679} Interview with Schmidt, supra note 208.

\textsuperscript{680} Interview with Cohn, supra note 261.
In summary, such empowerment ushering in a “semiotic democracy,” in which individuals would have the power to create and disseminate information and knowledge.  

Empowerment can also be implemented in ways that assist creators in employing copyright based on their preferences. For example, PK educates individual artists about “their rights and responsibilities and the copyright law and...the promises of new technologies.” CC has empowered individual creators to take control of their copyright according to their own preference by replacing copyright law’s default rule. This alternative certainly benefits creators’ self-interests and individual creations’ cultural value.

NPOs can also facilitate the grassroots empowerment efforts by giving individuals the resources, commitment, and networks needed for active participation in public policy. In the commons discourse, the FSF, EFF, and PK have organized individuals at the grassroots level around their mutual interest in fighting the current IP system. These activities are important ways to connect the individuals to the larger society and to facilitate engagement between individuals and formal political

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681 William W. Fisher III, Property and Contract on the Internet, 73 CHI.-KENT L. REV. 1203, 1217-18 (1998); William W. Fisher III. Theories of Intellectual Property, in NEW ESSAYS IN THE LEGAL AND POLITICAL THEORIES OF PROPERTY 172, 169-73 (Stephen R. Munzer ed., 2001); WILLIAM W. FISHER III, PROMISES TO KEEP: TECHNOLOGY, LAW, AND THE FUTURE OF ENTERTAINMENT 241 (2004); ZITTRAIN, FUTURE OF THE INTERNET, supra note 151, at 146-47. See also LESSIG, REMIX, supra note 76, at 107 (“the...most important effect of the “digital revolution”...[is that] [e]very important form of writing has now been democratized.”)

682 Interview with Sohn, supra note 269.

683 See e.g. Elkin-Koren, What Contracts Cannot Do, supra note 38, at 384-87; LASSICA, DARKNET, supra note 74, at 147; Johnson, supra note 172, at 408; LESSIG, REMIX, supra note 76, at 15, 17, 277; ZITTRAIN, FUTURE OF THE INTERNET, supra note 151, at 78-79, 225. Cf. Merges, supra note 211, at 1187 (“property...empowers a single person or entity...to make decisions regarding the use and disposition of a particular asset.”)

684 Elkin-Koren, What Contracts Cannot Do, supra note 38, at 387.

685 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 166.
To put more specifically, these NPOs translate ordinary people’s values into more recognizable and meaningful terms. They also promote a great level of political and social participation by making citizens’ voices heard in a variety of ways. Therefore, Frumkin views NPOs “as producing important expressive outputs that provide satisfaction to the individuals donating funds, managing programs, and volunteering their time.” Cohn of the EFF describes how the organization’s Action Center mobilize and empowers its members to participate in the policymaking process:

The Action Center is just a way to facilitate people making their voices heard. We give people the phone numbers if they want to call their Congressmen or we set it up so that they can send emails or regular letters to their Congressional representatives about issues of today. So it’s an important part of what we do because that’s how our memberships make their voices heard more directly.

In summary, NPOs’ advocacy efforts may be mounted via empowering and mobilizing individuals, and in the meantime, the interests of individuals will be more visible through NPOs’ networks.

Litigation is another approach that NPOs facilitate empowerment to individuals. Organizations, such as SFLC, EFF and ACLU, have helped individuals protect their freedoms against commercial power. For example, in an ongoing lawsuit Lenz v.
Universal Music Corp., EFF represents the plaintiff Stephanie Lenz who uploaded on YouTube a 29-second video of her baby dancing to a slightly audible Prince song “Let’s Go Crazy” playing in the background. The video was then removed by YouTube because of a take-down notice from Universal. Universal claims that the video infringed its copyright over the Prince song. Lenz, on the other hand, argues that Universal is liable for misrepresentation under § 512(f) because the use of the Prince music was obviously fair use.

Cohn of the EFF explained in an interview about the organization’s involvement in the case:

We picked this case because it is so ordinary. It’s what most parents do. They take a little video of their kid doing something cute and the Internet lets them put that up for the world to see...[The] technology has made it so the proud parents can show the world their beautiful child. The idea that a record company would claim copyright infringement over something as mundane as that a minute-long video of somebody’s child dancing just struck us as tremendously an area where we really needed to make a statement. We really needed to clear up the space so that the digital revolution could include being able to take a video of your kid dancing to a song without getting in the way of the copyright law on you.

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690 EFF, supra note 689; LESSIG, REMIX, supra note 76, at 2.
691 EFF, supra note 689; LESSIG, REMIX, supra note 76, at 2.
692 Lenz v. Universal Music Publishing Group, Cause No. 07-03783-MEJ (N.D. Cal. complaint filed July 24, 2007).
693 Interview with Cohn, supra note 261.
Therefore, by representing individuals like Lenz, EFF and other NPOs ensure copyright law will not seriously hamper individual creativities. In this sense, NPOs empower individual creators in the networked environment via litigation.

In summary, NPOs in the commons discourse have empowered individuals to pursue innovative solutions to social problems. However, it is occasionally difficult for the government and the market to provide such empowerment.

4. The Limitations of Government and Market Failure Theory

Many NPOs analyzed previously illustrate the market and government failure, but with a novel twist. Below, using NPOs in the commons environment as an example, I aim to illustrate certain limitations of Weisbrod’s theory.

a. Government Failure

Weisbrod’s theory embraces the subtle assumption that because the government has to satisfy the majority’s needs with limited resources, it may fail to respond to diverse demands from other parts of society. As a result, NPOs emerge to correct such government failures for minorities in our society. This hypothesis is certainly correct in explaining the existence of SFLC, F/OSS foundation, and the other NPOs that aim to satisfy the minority demand from the society. Newby of the Project Gutenberg Foundation provides a plausible explanation regarding government failure in digitally

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694 See LESSIG, REMIX, supra note 76, at 3 (“[t]he EFF handles lots of cases like this.”)
695 However, the FSF has shifted its focus in programmers to the general public in recent years. The organization’s Operations Managers Sullivan described this shift in an interview: “[I]t was more for programmers. But now with so many people using so many different computers and electronic devices, it really is something that has grown to be important for a much bigger section of the public… I think in the end that we work for everybody’s interests…because the freedoms involved with free software are relevant in all those contexts.” Interview with Sullivan, supra note 207.
preserving and proofreading public domain books, which is the Foundation’s primary task:

I think it’s too idealistic to think the government will do that… Most of the books are older books. They are books that very few people have an interest in… it’s hard to make that economic argument with all the other things that government needs to do that they should be preserving older literature from libraries.696

But with respect to the captured copyright legislation, the government failure is quite different from that portrayed in the market and government failure theory. As Professor Boyle argues, the very structure of the decision-making process in government agencies tends to produce a socially undesirable outcome for the benefit of a few content providers.697 Boyle notes that government fails in copyright policymaking process when well-organized, politically powerful groups capture the process and trump individual interests.698 He implies that by ignoring individual demand and public interests, the government, in fact, fails to maximize the utility of society.699

Other IP scholars argue similarly that within the policymaking process, there is a general predominance of narrow copyright industries compared with the influence of the general public.700 Litman asserts that industry-oriented copyright legislation

696 Interview with Newby, supra note 336.
699 See supra text accompanying note 697.
700 See supra note 552-704 accompanying text. See also Benkler, Wealth of Networks, supra note 2, at 41 (noting that industries occupying IP policymaking stage are actually a very small part of the universe of information production system); Bohannan, supra note 551, at 568 (stating that public interest in access to information is sacrificed in copyright legislation); Lasica, Darknet, supra note
reflects the fact that the costs stemming from collective action by copyright owners are lower than the costs stemming from collective action by widespread copyright users. Therefore, the existence of this industry-oriented legislation dramatically points to society’s exclusion of the general public from the copyright legislative process. These IP scholars’ argument regarding government failure in satisfying majority needs echoes the current literature concerning interest group politics. That literature suggests that small minorities can effectively capture the government policymaking process because it is uneconomical for the majority to act collectively to oppose them.

Indeed, the government failure sensed by IP scholars has provided the essential motives for several NPOs’ incorporation and operation. Some of these organizations have perceived themselves to be representatives of the general public. For example, Sohn of PK stated that “[the] general public has almost no representation [in the copyright lawmaking process], and that’s why [PK] exist[s].” Ress of KEI expressed a similar viewpoint regarding the organization’s role: “we…consider ourselves [as] a public interest organization with a focus on the public that has very

74, at 77 (quoting Professor Siva Vaidhyanathan’s words stating that regarding copyright legislation, the Congress listened to industry lobbyist Jack Valenti, rather than the general American people); LESSIG, FREE CULTURE, supra note 3, at 234 (stating that by passing the CTEA, Congress was supporting a small number of “famous and beloved copyright owners,” rather than the general public). 701 LANDES & POSNER, STRUCTURE OF INTELLECTUAL PROPERTY, supra note 38, at 407; see also Karjala, supra note 698, at 232-33 (using CTEA as an example to illustrate collective action and benefits from lobbying activities). 702 LITMAN, supra note 552, at 116. 703 See e.g. MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION (1971); George J. Stigler, Economic Competition and Political Competition, in THE ESSENCE OF STIGLER 117, 125 (Kurt R. Leube & Thomas Gale Moore eds., 1986). 704 Boyle, Second Enclosure Movement, supra note 1, at 72-73. Boyle cited PK, EFF, CC, and Duke Law School’s Center for the Study of the Public Domain as examples. Id. at 73, note 157. 705 Interview with Sohn, supra note 269.
low leverage of power usually.” 706 Lessig, the founder of CC, on the other hand, believes that current copyright law is supporting the extreme of All Rights Reserved, rather than the reasonable middle. 707 He indicates that the demand of Some Rights Reserved by approximately 85% of the citizens is inappropriately ignored in the copyright legislation. 708 This is why CC emerged to provide flexible licenses for the public.

In summary, the fact that several NPOs exist to represent the majority interests indicates one limitation of the market and government theory. If the government fails, not due to addressing majority interests but rather as a result of the because influential lobbying activities of industries, Weisbrod’s hypothesis regarding government failure will need to be adjusted.

b. Market Failure

In Weisbrod’s theory, the fundamental presumption of market failure faces a challenge in the commons environment, especially in the F/OSS context, where the link between NPOs and large proprietary firms is strengthening. Certainly, voluntary actions outside of the market have been the focus of commons production activities. 709 Some of the NPOs introduced in this Dissertation have demonstrated how significant value can be created and sustained outside of the market system; their solutions to

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706 Interview with Ress, supra note 274.
707 LASICA, DARKNET, supra note 74, at 36.
708 Id. at 38. See also LESSIG, FREE CULTURE, supra note 3, at 285, 305 (stating that the current “all rights reserved” copyright regime “works well only for the top 1 percent of the clients,” and is inconsistent with most creators’ view regarding the ideal control over their works).
709 BENKLER, WEALTH OF NETWORKS, supra note 2, at 22; see also HAROLD, OURSPACE, supra note 96, at 148 (noting that CC “promotes voluntary obligations and responsibilities.”)
public problems signal a renunciation of market activities.\textsuperscript{710} The creation and operation of these organizations are certainly philanthropic.

However, there are also other NPOs that are actively participating in market activities or that are themselves the result of such activities. Therefore, they are not completely outside of the market system. Some of them serve for-profits’ interests, whereas others partner with for-profits to earn more revenues for its philanthropic goals. For example, Michael Godwin, the General Counsel of the Wikimedia Foundation stated in an interview that “because of the stage Wikimedia Foundation is now in, in terms of its growth, we have to explore an additional revenue opportunities [from partnership with commercial enterprises] besides donations.”\textsuperscript{711} Similarly, open repositories of scholarly works or teaching materials may enable a university to obtain more funding from the market.\textsuperscript{712}

In the F/OSS discourse, many pragmatic developers have begun to believe that having for-profit players in some software segments may bring success to the entire F/OSS movement.\textsuperscript{713} A number of F/OSS NPOs, such as the OSI and ASF, have embraced pro-business mentality since their incorporation.\textsuperscript{714} Large companies have

\textsuperscript{710} Frumkin, On Being Nonprofit, supra note 102, at 9.
\textsuperscript{711} Interview with Godwin, supra note 336.
\textsuperscript{712} An open repository of scholarly works may help a university to raise its overall citation counts, which ultimately leads to more research funding. Ostrom & Hess, Knowledge Commons, supra note 35, at 55. Moreover, some believe that opening up a university’s educational resources “leads to more interest from potential applicants and inspires alumni in far-flung locales to make a donation.” Chaker, supra note 292.
\textsuperscript{713} Lerner & Tirole, Economics of Open Source, supra note 137, at 204; Lessig, Remix, supra note 76, at 180.
\textsuperscript{714} Interview with Behlendorf, supra note 216; Interview with Cooper, supra note 166; Weber, Success of Open Source, supra note 61, at 110.
tried to influence the direction of F/OSS development by offering code and even paying developers to write code. 715

Moreover, prominent for-profit firms either establish or serve as the primary sponsors for many of the NPOs hosting F/OSS projects. For example, the Eclipse Foundation was initially funded by Ericsson, HP, IBM, Intel, SAP and some other for-profit firms. 716 IBM has provided resources for the Eclipse Foundation since the Foundation’s incorporation. 717 IBM also financially supported the incorporation of the ASF, 718 and IBM’s employees have continuously contributed significant resources to the ASF. 719 IBM encourages its engineers to be contributors or project leaders of the Apache projects. 720 Currently, two out of nine board members of ASF are IBM employees. 721 On the other hand, Google has generated significant revenue for the

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715 For example, IBM employees have contributed code to the Apache project. See Capek et al., IBM’s Open-source Involvement, supra note 137, at 254-55; WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 124-25. Google has also contributed to F/OSS communities numerous lines of code. Interview with Chris DiBona, Open Source Program Manager, Google, in Mountain View, Cal. (Jun. 18, 2008).
718 See e.g. TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 287; VAN WENDEL DE JOODE ET AL., PROTECTING THE VIRTUAL COMMONS, supra note 183, at 82.
719 See e.g. Capek et al., IBM’s Open-source Involvement, supra note 137, at 254-55; TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 79.
720 Capek et al., IBM’s Open-source Involvement, supra note 137, at 254-55; Interview with Kappos, supra note 217.
721 Capek et al., IBM’s Open-source Involvement, supra note 137, at 254.
Mozilla Foundation.\textsuperscript{722} Furthermore, the Linux Foundation (previously OSDL)\textsuperscript{723} and the Python Software Foundation\textsuperscript{724} are sponsored by for-profits as well.

The Mozilla Foundation probably best exemplifies the close relationship between NPOs and for-profits. As described in part II.C.2, the Foundation is a spin-off of America Online’s Netscape division.\textsuperscript{725} AOL provided the foundation with $2 million seed funding and other infrastructure resources.\textsuperscript{726} In 2005, the Foundation launched a for-profit subsidiary, the Mozilla Corporation, to govern the project’s marketing and distribution activities.\textsuperscript{727} According to the Foundation, the revenue from the Mozilla Corporation “can be used to make the Mozilla project self-sustaining.”\textsuperscript{728}

Based on these examples, it is not difficult to deduce that proprietary firms have a specific interest in being involved with NPOs in the F/OSS discourse, and vice versa. Such involvement allows for-profits to communicate with F/OSS communities and to express their ideas regarding F/OSS development.\textsuperscript{729} As DiBona from Google explained:

\begin{quote}
Google uses a lot of the [free or open source] software, so being a part of those communities and how they
\end{quote}

\textsuperscript{722} Interview with Behlendorf, \textit{supra} note 216; Interview with DiBona, \textit{supra} note 715; Interview with Hecker, \textit{supra} note 200.
\textsuperscript{724} The Python Software Foundation is sponsored by ActiveState, ActiveGrid, Google, and many other for-profit firms. See the Python Foundation, Python Software Foundation Homepage, at http://www.python.org/psf/ (last visited May 26, 2009); Interview with Ascher, \textit{supra} note 209. See also WEISBROD, NONPROFIT ECONOMY, \textit{supra} note 103, at 31 (noting that “donors can increase the level and even change the direction of the recipient organization’s activity”).
\textsuperscript{725} Mozilla Foundation, \textit{About the Mozilla Foundation}, http://www.mozilla.org/foundation/ (last visited May 26, 2009).
\textsuperscript{726} Baker, \textit{Mozilla Project}, \textit{supra} note 200, at 13.
\textsuperscript{728} \textit{Id}.
\textsuperscript{729} O’Mahony, \textit{Nonprofit Foundations}, \textit{supra} note 111, at 406 (noting that GNOME Foundation’s Advisory Board is a channel for for-profits to express their opinion).
develop is pretty smart, I must admit. We don’t want to be surprised by where the world of software development goes and one of the ways we can make sure we don’t is being a part of it, and that’s why we’re so active in the open source world.  

Cooperating with NPOs in the commons scenario may have other strategic implications for for-profit firms. Robert P. Merges has argued that for-profits’ investments in F/OSS and other intellectual commons are property-preempting investments made to offset competitors’ property rights. Firms that make such investment can not only contribute to the commons environment but also avoid intellectual resources being privatized by their competitors. Merges’s such argument is echoed by DiBona from Google in an interview:

Google tries to fund these organizations because it helps ensure the Internet remains a competitive, fair, and open place, so we fund a ton of development in open source, we fund tons of organizations like Creative Commons…if any one organization controls too much of…the Internet…that’s bad for us, that’s bad for anybody…So, our broad goal is to keep the Internet that fair, that free, and that open. That way we can continue to be who we are.

Connecting to reputable NPOs also assists some proprietary firms to build their credibility concerning certain F/OSS-related products or services. As Don Tapscott and Anthony Williams wrote: “as companies assign serious resources to peer production communities, questions about when to contribute and how to harness commons are arriving at the heart of corporate strategy.” Ascher, on the other hand,  

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730 Interview with DiBona, supra note 715.  
731 Merges, supra note 138, at 185-96. See also BOYLE, PUBLIC DOMAIN, supra note 2, at 201 (noting that in some cases F/OSS and CC licenses are used “to prevent exclusivity”); HELLER, GRIDLOCK ECONOMY, supra note 15, at 71-72 (offering a more intricate analysis of PPI in the biomedical context).  
732 Merges, supra note 138, at 186.  
733 Interview with DiBona, supra note 715.  
734 TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 92.
pointed out how having a position in the Python Software Foundation helps his proprietary business ActiveState:

> It might help build creditability with potential customers or partners in the sense that I am well known in the open source foundation world… [However,] I don’t have access to private Foundation information that is at all useful to my corporation… In practice, it’s a complete neutral thing… ActiveState needs these languages in its open source projects to be healthy, so it is a strategic interest for ActiveState that this organizations are well run and healthy.735

Weisbrod’s theory regarding market failure is especially limited when it is applied to § 501(C)(6) organizations, which are business leagues and groups. Given the close relationship between an organization’s source of revenue and the nature of its output,736 § 501(C)(6) organizations’ primary goals are usually designed to serve their members’ business needs, although they also simultaneously produce certain public goods for the F/OSS communities.737 The fact that for-profit firms play an indispensable role in the operation of § 5011(6) organizations suggests that sometimes the market (or the for-profit sector) is providing certain public goods through NPOs.

Given for-profits’ active involvement in supporting NPOs, it is difficult to argue that the market has totally failed to provide the public goods demanded by society. Rather, it is more likely that the NPO is a more suitable vehicle through which for-profit firms can provide public goods, act jointly, or access voluntary intellectual contributions.738 This alternation in institutional form is probably due to some unique

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735 Interview with Ascher, supra note 209.
736 Cf. WEISBROD, VOLUNTARY NONPROFIT SECTOR, supra note 113, at 64-65 (distinguishing NPOs from for-profits by the types of their output and the methods of finance).
737 In contrast, as a §510(c)(3) organization relies on donations to collect widespread individual contributions, it must tailor the form to the wants of those donors.
738 Cf. Capek et al, IBM’s Open-source Involvement, supra note 137, at 253 (noting that “open-source provided a much broader avenue to reach the community.”)
features of the commons environment. These features will be the subject of the
Chapter 5.
CHAPTER 5  ASSOCIATING NPOS WITH THE COMMONS ENVIRONMENT

In Chapter 4, I described both the application of current dominant theories to NPOs in the commons environment and the limitations of these theories. My analysis in Chapter 4 is unidirectional and explores how NPOs function as a private response to a variety of market and government failures in the information society. Nevertheless, this analysis does not provide an adequate explanation for the commons environment being more suitable for NPOs than for for-profits to flourish. Although in the F/OSS arena, scholars have argued that “a passion for the ideology behind [F]OSS seems to be what prevents many organizations from becoming profit-earning entities,”739 most current literature has not provided a detailed explanation of the close links between the nature of the commons and NPOs. Therefore, in this section, I turn my attention to the commons environment and the distinctive traits that cause NPOs to proliferate in this environment.

Roger A. Lohmann is probably the first scholar to identify the link between NPOs and the commons. Lohmann uses the term commons to refer to the entire nonprofit sector740 because he believes that NPOs are involved in a vast array of relationships between benefactors, intermediaries, and beneficiaries in which associative communities can operate freely. Linked to the Greek term koinonia, Lohmann uses the term “the commons” to emphasize free participation, common

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739 FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 121.
740 See LOHMANN, COMMONS, supra note 140, at 17-21. See also BOYLE, PUBLIC DOMAIN, supra note 2, at 195 (noting that a large number of commons production and sharing activities are nonprofit).
purposes, shared goods, a sense of mutuality, and a commitment to fairness. Based on Lohmann’s theory, Dart further refers to the commons as “an organizational space containing activity focused on pro-social behavior, mutuality, voluntary labor, and production of collective goods.”

Although Lohmann and Dart provide important insights into the connection between NPOs and the commons, they do not capture the NPOs’ inimitable relationship with the intellectual commons. In order to supplement the inadequacy of the current literature, I argue that in observing the NPO phenomenon described in this Dissertation, we need to identify and to understand the characteristics that make the commons environment an ideal milieu in which NPOs can flourish. Such a belief is based on the claim that environmental characteristics shape organizations and their forms, and that organizations in the same environment will become structurally similar as they respond to common environmental constraints. In the section below, I argue that the nonproprietary, gift, and community characteristics of the commons environment have made it a place for NPOs to thrive.

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741 Id. at 58-59.
743 See Paul J. DiMaggio & Walter W. Powell, The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields, 48 AM. SOC. REV. 147, 148-50 (1983). See also DiMaggio & Anheier, Sociology of Nonprofit Organizations, supra note 16, at 144 (introducing the ecological approach to NPO studies which claims that the success of each organizational form is “determined by material and ideological environments”); Smith & Grønbjerg, supra note 143, at 235 (“institutional theories stress that nonprofit organizations represent the choices of individuals that are in turn shaped by their institutional environment.”)
A. Nonproprietary Ownership

1. The Nonproprietary Nature of the Commons

Because of the commons’ public goods attributes and scattered contributors, some researchers indicate that commons, such as the F/OSS and Wikipedia content, have “no legal owner.” Indeed, due to the collaborative nature of the commons, it is extremely difficult to accurately identify the ownership status of the commons. Although each contributor owns her or his contribution in the commons discourse, each piece of the contribution is only valuable when it is combined with other contributions. Therefore, no one can appropriate the entire creative work for her- or himself. Moreover, the incentive structure underlying the commons-based peer production systems is usually hostile to exclusive claims over ownership. In summary, the commons exemplifies very strong characteristics of nonproprietary ownership.

2. The Nonproprietary Nature of the NPOs

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744 FELLER & FITZGERALD, OPEN SOURCE SOFTWARE DEVELOPMENT, supra note 137, at 143, 161; TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 84. See also SUNSTEIN, INFOTOPIA, supra note 56, at 153-54 (noting that authorship over Wikipedia content is never claimed or rewarded).
745 ZITTRAIN, FUTURE OF THE INTERNET, supra note 151, at 189. Cf. Heverly, Informtion Semicommons, supra note 38, at 1184 (“certain individual attributes of information cannot be owned.”)
747 Id; Benkler & Nissenbaum, Commons-based Peer Production, supra note 399, at 395-96. See also LESSIG, REMIX, supra note 76, at 157 (describing one of the norms underlying the Wikipedia community is that “nobody owned Wikipedia exclusively”); SHIRKY, HERE COMES EVERYBODY, supra note 72, at 50 (“The litmus test for collaborative production is simple: no one person can take credit for what gets created.”)
748 DEEK & MCHUGH, OPEN SOURCE, supra note 136, at 212; LESSIG, REMIX, supra note 76, at 240-41.
Similarly, due to the non-distribution constraint, some researchers suggest that NPOs exist without a clear line of ownership or even have no “owners” at all. This characteristic of unclear-ownership has caused scholars to refer to NPOs as “nonproprietary organizations.” NPOs’ nonproprietary nature can also be understood through its multiple stakeholders, including customers, board members, donors, and managers. Theoretically, none of these stakeholders has an ultimate claim over an NPO and its resources.

In fact, it is not legally correct to state that neither NPOs nor F/OSS have “owners”. Nonetheless, the similar “no owner” or “nonexclusive ownership” impression associated with NPOs and the commons environment indicates that the NPOs’ loose ownership structure probably fits well with the environment’s norm of non-exclusive control over information. As the founders of the Mozilla Foundation believe, the nonprofit structure is more suitable for them to achieve the mission of keeping the Internet as an open platform. Similarly, when describing the history of

749 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 5, 8, 14, 16.
750 John Simon et al., supra note 107, at 268; Weisbrod; supra note 104, at 73.
751 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 14. Frumkin also refers to NPOs’ this character as “ownerless character.” See id. at 58, 62, 87.
752 Id. at 87.
753 Id. at 5. But see Hansmann, Reforming Nonprofit Corporation Law, supra note 10, at 561-62 (describing the scenario where NPOs are controlled by their patrons).
754 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 7 (noting that only certain parties have legal standing for NPOs in the court); Cahir, supra note 37, at 639-40 (recognizing the de jure owners of the commons); DEEK & MCMUGH, OPEN SOURCE, supra note 136, at 225 (stating that contributors of the Linux and Apache projects are copyright owners of their contribution); Fisk, supra note 219, at 89 (recognizing the ownership of F/OSS); Leach, supra note 746, at 38 (noting that in the Linux operating system, each contributor owns her or his contribution); Merges, supra note 211, at 1181, 1189 (recognizing IP ownership belongs to group of Wikipedians and F/OSS communities); Samuelson, supra note 54, at 799 (noting that authors of F/OSS or CC content can invoke IP protection); Steinberg, Economic Theories, supra note 103, at 118 (perceiving NPOs’ board members as their owners with rights less than usual ownership); Wu, Authorship Policy, supra note 159, at 337, 342, 244, 348 (acknowledging the fact that F/OSS and Wikipedia content are copyrighted).
755 Interview with Behlendorf, supra note 216.
ASF’s incorporation, Behlendorf linked the nonproprietary nature of both commons and NPOs:

[W]hen we were thinking about how it should be structured, we didn’t want something that was a for-profit because then you have to start thinking about who has ownership, how much ownership they have, and what’s the fair way to try to judge percentage of ownership…all of us had started somewhere volunteering, and we all wanted this to be a place where we didn’t have to worry as much about that. We wanted to be very liberal with the credit we gave, but we feel that when people fight over percentage points, it can really suck a lot of energy and a lot of enthusiasm out of what you’re doing. So being a nonprofit seemed to make the most sense. We were really creating what we felt was a natural resource. It seemed to be the kind of thing that a nonprofit could be geared to defend.756

In contrast, because of their for-profit nature, commercial entities tend to exert centralized control over intellectual resources.757 Consider the software industry for example, the hacker culture conflicts with the commercial practice, where source code is protected by IP law and where access to source code is highly restricted.758 Such conflict explains why when Richard Stallman left MIT’s Artificial Intelligence Lab, he chose not to join a private firm.759 Stallman was opposed to the closed nature of the code produced under the conventional exclusion-based software production model.760

756 Id. According to Behlendorf, this rationale can also be applied to the nonprofit status of Mozilla Foundation. Id. (“when you’re building something that is intended to be a public resource…, it seems like a nonprofit structure is the best way to go.”)

757 See e.g. HAROLD, OURSPACE, supra note 96, at 136-37; TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 27. See also Armbruster, supra note 350, at 27 (noting that free sharing is incompatible with proprietary journal publishers’ business model based on exclusive rights); Markoff, supra note 105 (stating the tension between information sharing and incentive to profit in Silicon Valley).

758 See GOLSTEIN, supra note 133, at 193 (describing the fact that source code is regarded as a company’s “crown jewels” in the software industry).

759 See Stallman, GNU Project, supra note 150, at 17.

760 See Id. at 16; Richard Stallman, Why Software Should Not Have Owners, FREE SOFTWARE, FREE SOCIETY 45, 45-47 (Joshua Gay ed., 2002).
He views FSF work as a first step away from that model.\textsuperscript{761} Eric S. Raymond, who distinguished himself from FSF’s ethical condemnation of commercial software, also believes that “pragmatic” hackers discriminate to some degree among proprietary firms.\textsuperscript{762}

Moreover, since the regulation of the § 501(c)(3) organization, which is the dominant form of NPOs in the commons environment, stipulates that no single private donor can supply a substantial percentage of the organization’s total funding, commons contributors may tend to believe that no single entity can control this type of organization. As a result, an § 501(C)(3) organization may be perceived as being the best organizational form that facilitates collective actions within the commons community. In summary, compared to the nature of for-profits, the nature of NPOs seems much more consonant to the commons environment in terms of ownership of resources.

\textbf{B. Gift Culture}

\textbf{1. The Gift Culture in the Commons Discourse}

Many F/OSS contributors identify themselves as members of the hacker community.\textsuperscript{763} It is an important characteristic of hacker culture that programmers freely give and exchange the code that they write individually or collaboratively.\textsuperscript{764} Hackers developed a unique ideology, called the “hacker ethic,” which announces

\begin{itemize}
\item \textsuperscript{761} Stallman, \textit{GNU Project}, supra note 150, at 21-22.
\item \textsuperscript{763} O’Mahony, \textit{Nonprofit Foundations}, supra note 111, at 394.
\end{itemize}
hackers’ “commitment to free access to computers and information” and their “mistrust of centralized authority.”

Eric S. Raymond views F/OSS communities as being “most effectively understood not in conventional exchange-economy terms but as what anthropologists call a ‘gift culture’ in which members compete for status by giving things away.” The incentives for such gift-giving efforts can be broadly interpreted to include a variety of reasons other than altruism identified by Raymond. The gift economy is distinguished from the commodity economy in the capitalist society, in which labor is supplied as a function of wages. F/OSS contributors may expect that their gift will be “reciprocated by suggestions, bug reports, debugging, hard work, praise, and more source code.”

Beyond the F/OSS scenario, the “gift culture” or the “share culture” is increasingly pervasive in other online commons communities. For example, CC...
users and Wikipedia community members have created an enormous amount of content not for pecuniary gains.\textsuperscript{[771]} As Bollier stated:

> “[W]e are actually at a point where some of the old models are being challenged by online participatory commons communities...They do not work for money. And that makes them qualitatively different...in the online world, it makes them more generative or create value in the way that the market can’t because the community of trust doesn’t make profit and people feel they are not going to get rip off. So...there is a huge structural difference between the commons and the market.”\textsuperscript{[772]}

In summary, commons communities usually emphasize the voluntary and gift nature of their contributions. Therefore, the gift nature represents a unique type of culture in the commons realm.

2. The Incompatibility Between the Gift Culture and Exclusive Control

NPOs’ unique fit with the gift economy actually concerns the obvious conflicts between traditional profit-seeking activities and the gift culture.\textsuperscript{[773]}

Although numerous for-profit companies have directly supported peer-production projects,\textsuperscript{[774]} many of these projects have either associated with another NPO or not yet undergone commercialization. For example, Sendmail, Inc., a for-profit F/OSS company that sells Sendmail-related software enhancements and services, established the non-profit Sendmail Consortium to encourage the continuing F/OSS development. Moreover, the Mozilla Corporation, a for-profit company established to “coordinate

\textsuperscript{[771]} See e.g. SUNSTEIN, INFOTOPIA, supra note 56, at 157, 222.
\textsuperscript{[772]} Interview with Bollier, supra note 140. See also Cooper, From WiFi to Wikis and Open Source, supra note 21, at 157 (stating that in the collaborative production system, individuals “desire to contribute without compensation is strong”).
\textsuperscript{[773]} See Guiggin & Hunter, at 230 (describing the conflicts between gift motives and profit motives).
\textsuperscript{[774]} See supra note 464.
the development and marketing of Mozilla technologies and products,” remains “a wholly-owned subsidiary of the nonprofit Mozilla Foundation.”

According to Hecker, the Executive Director of the Mozilla Foundation, the Mozilla Corporation is purposely structured as having the nonprofit foundation as the sole shareholder so that “there would have been really no straightforward way for the [the shareholder] to actually sell part of the corporation to a private company.” He further explained this point in an interview,

[If Mozilla Corporation has for-profit shareholders,] it would affect the motivation of volunteers who are working on Firefox and other things because if anything they would say to themselves, ‘why am I continuing with hard work and basically my work is going to end up going to the private gain of some private shareholder.’

The difficulties in completely commercializing peer-production projects occur in the cultural area as well. For example, the Open Directory Project, currently owned by Netscape Inc., is “the largest, most comprehensive human-edited directory of the Web…constructed and maintained by a vast, global community of volunteer editors.” Early in its history, the project gave rise to controversy when volunteers asserted that the project had deceived them into unknowingly working for a for-profit firm. Although the project’s host remains a for-profit, commercialization has not yet subsumed the project, and all the content therein is licensed under the terms of the

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776 Interview with Hecker, supra note 200.
777 Id.
780 Id.
Open Directory License. Another similar situation arose concerning the voluntary discussion moderators in AOL board. When the volunteers learned that their contributions were used to increase the firm’s value, they decide to leave the forum.781

Even for commons projects hosted by NPOs, commercializing efforts are occasionally scrutinized by the communities. In many circumstances, the gift culture comprises a resistance to the privatization of voluntary contributions. Communities’ choice of CC licenses may partly reflect their attitude toward commercialization. Although the CC licenses enable creators to decide if they allow commercial use of their works, most of them adopted licenses that disallowed any commercial use.782

Another example concerns the commercial usage of Project Gutenberg’s trademark on a proprietary business, which charges users for access to digital books.783 Numerous community members objected such practice because they believe it would harm the Project’s original gift culture and their incentives for contribution.784 A volunteer once wrote: “I didn’t slave all these hours just…for a commercial purpose…It’s sad to see my work used for a commercial site.”785 Project Gutenberg Foundation’s CEO Greg Newby, who was then partly involved in the commercial project, recalls that “a lot of the volunteers became upset…they believed the fact that we had an affiliate that was going to follow different procedures meant

781 Benkler, Coase’s Penguin, supra note 31, at 440. Cf. LESSIG, REMIX, supra note 76, at 239 (documenting Brewster Kahle’s point that communities will feel being betrayed if the project hosts go into commercialization and the commons are therefore taken away)
782 Chander & Sunder, supra note 54, at 1361-62.
785 Id.
that they were somehow not consistent with the values the volunteers had.\footnote{Interview with Newby, supra note 336.}

Although the dispute was eventually resolved, the Foundation has used trademark license to prevent potential commercialization of the Gutenberg brand name. As Newby explained:

> Commercialization is possible. However, it’s under a pretty limited license. You’re not able to change the content other than to do some reformatting and things like that. So what that means really is that there’s not a very easy way for a commercial enterprise to detract value from what the volunteers have done. …[for] the commercial enterprises, if you want to detract value, don’t confuse our name. If you wanted to put it into some locked format where there’s no ability to get the plain text or get a derivative work or some of the other things that we care about, then the license says that they can’t do that. The license is really like a safety valve for making sure that the value in terms of the things remaining free.\footnote{Id. See also Project Gutenberg Foundation, Gutenberg: The Project Gutenberg License, http://www.gutenberg.org/wiki/Gutenberg:The_Project_Gutenberg_License (last visited May 26, 2009).}

Moreover, the Wikimedia Foundation has hesitated to adopt commercial advertising in Wikipedia Project\footnote{Lessig, Remix, supra note 76, at 161 (describing Wikimedia Foundation’s significant decision of not running ads to support the underlying project).} because of the opposition from the community of voluntary editors and contributors.\footnote{Shirky, Here Comes Everybody, supra note 72, at 273-74.} As the Foundation’s General Counsel Michael Godwin elucidated in an interview,

> [O]ne of the frequent issues that are raised within the Wikipedia group community is whether it would ever be even remotely acceptable to carry advertising of any sort, even sort of the low overhead relatively unobtrusive advertising of something like Google ad sense. I think that it is possible that the community of users might accept that…I think that in theory a sufficiently sensitive advertising program could possibly generate important revenue for Wikipedia, but our...
community of editors and contributors tends to be very resistant to that model. So right now one of the things we are trying to do is to figure out ways that we can continue be relatively un-commercial in terms of how we present ourselves to the public.790

Communities’ resistance to commercialization also reflects on NPOs’ cooperation with for-profit business. Godwin expressed the Wikimedia Foundation’s concern regarding building partnership with for-profit companies:

Obviously we’re not going to partner with a commercial enterprise whose business we find antithetical to our philosophy, so we try to be very careful about that… Because we know that if we make an uncomfortable partnership with some business, our community will be unhappy with us. So I think we want to try…make decisions and partnerships that we feel that we can defend.791

From these stories,792 it is apparent that despite for-profits’ increasing adoption of peer production as a business strategy, numerous peer-production communities still place a negative value on the exclusive commercial control of the voluntarily produced information.

3. The Gift Culture in the NPO Discourse

The close link between the nonprofit sector and gift culture in human society can be traced to the Roman laws governing trust and foundations that facilitated gift-giving from donors to beneficiaries.793 Current literature on NPOs highlights the gift-
giving activities in the philanthropic context as well.\textsuperscript{794} Since the gift culture parallels much profit-seeking impulse and IP practice in the proprietary industry,\textsuperscript{795} it is not surprising that NPO is probably the only ideal organizational form compatible with this culture.\textsuperscript{796}

As many researchers have found, NPOs are usually better than for-profits in connection with seeking voluntary efforts, since most altruistic volunteers do not want their input to flow to for-profit organizations.\textsuperscript{797} Sullivan explained NPOs’ advantage in attracting volunteers in the F/OSS realm:

\begin{quote}
Generally when you’re talking about comparing a non-profit and a company, one of the advantages is that people are willing to volunteer their time on behalf of a non-profit, and put their spare time and their skills to work for the different work projects that need to be done.\textsuperscript{798}
\end{quote}

Similarly, by comparing the Gutenberg Project and Google Book Project, Newby of the Project Gutenberg vividly described volunteers’ motives in nonprofit and for-profit settings:

\begin{quote}
The value to the volunteers is that what they do is not generating revenue for a company and it’s not
\end{quote}

\textsuperscript{794} See e.g. Lise Vesterlund, \textit{Why Do People Give?}, in \textit{THE NONPROFIT SECTOR: A RESEARCH HANDBOOK} 568 (Walter W. Powell ed., 2006); LOHMANN, COMMONS, supra note 140, at 11-12, 67.
\textsuperscript{795} TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 67, 69.
\textsuperscript{796} O’Mahony, \textit{Nonprofit Foundations}, supra note 111, at 396-97; see also Lerner & Tirole, \textit{Economics of Open Source}, supra note 137, at 220 (stating that “[a] successful open source project…requires…an organization consistent with the nature of the process.”)
\textsuperscript{797} See e.g. John H. Goddeeris & Burton A. Weisbrod, \textit{Conversion from Nonprofit to For-profit Legal Status: Why Does It Happen and Should Anyone Care?}, in \textit{TO PROFIT OR NOT TO PROFIT: THE COMMERCIAL TRANSFORMATION OF THE NONPROFIT SECTOR} 129, 134 (Burton A. Weisbrod ed., 1998); Laura Leete, \textit{Work in the Nonprofit Sector}, in \textit{THE NONPROFIT SECTOR: A RESEARCH HANDBOOK} 159, 166-67 (Walter W. Powell ed., 2006); Smith & Grønbjerg, supra note 143, at 225. \textit{See also} Davis, supra note 332, at 1094-95, 1098-99 (discussing NPOs’ superior access to voluntary contract drafting resources); LOHMANN, COMMONS, supra note 140, at 154-65 (discussing volunteer labor in the nonprofit context); WALDEMAR NIELSEN, \textit{THE THIRD SECTOR: KEYSTONE OF A CARING SOCIETY} 5 (1980) (arguing that NPOs provide “outlets for…altruism”); Interview with Behlendorf, supra note 216 (“being a nonprofit certainly made it easier to ask for…contributions.”)
\textsuperscript{798} Interview with Sullivan, supra note 207.
something in any way being withheld for various purposes. In other words, when you have a Project Gutenberg book, you can really do anything you want with it. So with the Google books, of course, they have a fairly free access to the public domain books, but the other ones are in single page. You can’t really do much with them. So…it’s definitely the case for the volunteers to care a lot about that. If somehow we came up with a project where the volunteers were doing things that were going to a for-profit organization, we’d have to be very careful with that because the volunteers would not be happy with that, unless they saw how it was really going to be beneficial to the things we give away.799

This narrowness of the compatibility between gift culture and NPOs’ nature may explain why the main commons projects are hosted by NPOs, rather than by proprietary firms. Although some proprietary firms seek to leverage resources created by F/OSS communities, these firms choose to conduct such investment through NPOs800 in compliance with the hacker ethic, which pervades hacker communities.801

The gift or share culture has provided indispensable inspiration to NPOs in other parts of the commons environment as well. Such culture underlying the commons environment is consistent with NPOs’ non-coercive nature, which distinguishes NPOs from the government sector.802 Godwin of the Wikimedia Foundation explained how the Foundation’s nonprofit status relates to the gift culture underlying the Wikipedia Project:

[B]y setting [the Wikipedia] up as a free resource that is organized around a non-profit, it came across as very inviting for anyone to step in and say ‘I can contribute to this too’… one thing that we can do is to build our

799 Interview with Newby, supra note 336.
800 See supra text accompanying note 716-724.
801 As Benkler suggested, “individuals would be more willing to contribute their time and efforts to…a nonprofit enterprise than to a debugging site set up by Microsoft.” Benkler, Coase’s Penguin, supra note 31, at 440.
802 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 3.
philosophy around giving something to people for free without trying to sell them anything. That is something I think a for-profit version of Wikipedia could not do.

In addition to coping with collective action problems described in Part A.2.b of Chapter 3, NPOs makes F/OSS sustainable through compensating key developers. In reality, some F/OSS projects might need their key developers to spend substantial time concentrating on the important coding problems. Such demand will certainly affect an individual developer’s time allocation between her job and F/OSS contribution. As a consequence, some NPOs provide financial support for key F/OSS developers to help them focus on complicated programming issues. For example, TPF has provided financial grants for leading Perl developers so that these developers can “have the time and the freedom-from-distraction to study difficult problems carefully, and develop practical, efficient, and easy-to-use solutions.”

The Linux Foundation has also hired some key developers, such as Linus Torvalds, to work full time on improving the Linux operating system.

In view of the fact that developers are expected to contribute for free, the financial support itself may be in conflict with the gift nature of the F/OSS spirit. To alleviate such conflicts, NPO’s non-distribution constraint plays an important role to convince the F/OSS community that such financial support is not actually in conflict with the hacker culture or the gift economy. Since an NPO is not aiming to maximize its profit, individual developers supported by such an organization can maintain more

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803 Interview with Godwin, supra note 336.
805 The Linux Foundation, Protect, supra note 214; TAPSCOTT & WILLIAMS, WIKINOMICS, supra note 137, at 70.
independence than those who work for proprietary firms. Therefore, given that key developers’ full-time concentration is necessary for some F/OSS projects, NPO’s funding model “can best support non-commercial [F/OSS] development.”

4. The New Hybrid Economy

The fact that the NPOs’ nature is more compatible with the hacker ethic or the gift economy does not necessarily lead to the conclusion that all peer-production communities are against commercial or profitable use of the aggregated contribution. The F/OSS communities’ attitude toward commercial or profitable use of code may depend on the nature of the underlying F/OSS project or the historic background of the community. For example, the Apache developers have endeavored to make their code commercially valuable since the very beginning of the project. This is because many Apache developers were building website for various companies. The Eclipse Foundation, spun off from IBM, has “focused on enabling a commercially profitable ecosystem around the free platform.”

Based on the cases of the ASF and the Eclipse Foundation, it appears likely that the baseline for these two F/OSS communities is not whether the code will be used to make profit, but whether the code is maintained as a commons. Similarly, in other cultural projects, communities are not always against commercialization. What

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806 See id. (stating that developers financially supported by the Linux Foundation “can maintain independence while working full time to improve Linux”).
807 TPF, supra note 804.
808 WEBER, SUCCESS OF OPEN SOURCE, supra note 61, at 110.
809 Id.
811 See e.g. Quiggin & Hunter, Money Ruins Everything, supra note 62, at 218-19.
812 Professor Lessig reaches the same conclusion after analyzing the success of Red Hat. See LESSIG, REMIX, supra note 76, at 183 (“So long as the work was not turned proprietary—so long the code remained ‘free’ in the sense of freedom—neither Stallman nor Linus Torvalds was going to object.”)
is invariably ill-perceived among these communities is actually the attempt to exclude peer-produced resources. This is because once a gift is owned exclusively, its gift nature diminishes. The nonprofit form of these organizations can at least assure the contributors that the communities will not be influenced by commercial, exclusive biases.

Nonetheless, for-profit firms can still build its own unique position in the commons economy if they are not seeking to make profit from the exclusive control of intellectual resources. As Professor Lessig explains, a hybrid of sharing economy and commercial economy exists when commercial entities are able to leverage value from the sharing economy. Occasionally, for-profits may be the ideal entities to exploit certain value underlying the commons environment and their coexistence with NPOs enables the ecology of sustainable commons development.

C. Virtual Communities

1. The Community Attribute of the Commons Environment

The gift economy is usually associated with some feature of “interpersonal dependence,” which means that the gift functions to “develop or maintain social
relationship between parties.” As Bollier has points out, “[w]hat matters most [for a gift economy] is the ability to create and sustain caring, robust relationships within a group of people who share common commitments.” James Leach also describes the commons creative process as the network, and a unique relationship occurring between people. This process is considerably different from the proprietary information production structure, which is isolated in an individual’s mental work. Therefore, it is this informal person-to-person relationship that maintains the commons projects.

When the interpersonal relationship takes hold between multiple parties, a community emerges to represent the aggregated interests of these parties. Community members continuously interact with one another around their mutual interests. For individual contributors, affiliation with a community may significantly affect their motives for contributing intellectual power. Therefore, some researchers suggest that the commons always has a root in communities. Successful F/OSS projects have demonstrated the importance of communities in large-scale collaborative

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818 Bell, supra note 768, at 156. See also Lessig, Remix, supra note 76, at 145 (noting that the access to culture in the sharing economy “is regulated not by price, but by a complex set of social relations), at 148 (“Gifts…are…devices for building connections with people.”)
819 Bollrier, Silent Theft, supra note 5, at 31. See also Bollier, supra note 62, at 29 (arguing that the commons is “a social solidarity with each other.”) Cf. Frischmann, Cultural Environmentalism, supra note 86, at 1125 (noting that in the digitally networked environment, “users develop meaningful associations with others that may coalesce in groups, communities, and social networks.”)
820 Id. at 39.
821 Goldman & Gabriel, Innovation Happens Elsewhere, supra note 54, at 64. See also Lohmann, Commons, supra note 140, at 129 (“people would recognize a commons [because] they wish to associate with one another for some particular reason.”)
822 Capek et al, IBM’s Open-source Involvement, supra note 137, at 253; Goldman & Gabriel, Innovation Happens Elsewhere, supra note 54, at 52; Shah, supra note 2, at 343; Eric von Hippel, Democratizing Innovation 165 (2005).
824 Bollier, Commons Movement, supra note 54, at 1; Lohmann, Commons, supra note 140, at 61-62; Yu, supra note 390, at 374; see also Ostrom & Hess, Knowledge Commons, supra note 35, at 43-44 (noting that “successful commons governance requires an active community.”)
information production activities. The CC and Wikimedia Foundation also builds large creative communities through collaboration and sharing of intellectual resources.

Members of peer-production communities collaborate with one another based on the “axiom of kinship amity.” Just like family, ethnic, and religious affiliation, association with a commons community is usually not “traded, divided, or bundled.” Personal connection to certain commons resources cannot be transacted in the marketplace either. Such connections are fairly different from acquiring the shareholder status of a for-profit enterprise by purchasing its stock. Moreover, the

826 See Goldman & Gabriel, Innovation Happens Elsewhere, supra note 54, at 52-53; see also Capek et al, IBM’s Open-source Involvement, supra note 137, at 253 (noting the importance of the community to F/OSS idea); Feller & Fitzgerald, Open Source Software Development, supra note 137, at 161 (stating that “[t]he [F]OSS movement is often portrayed as highly community-centered”); Schweik, supra note 54, at 284-86 (describing F/OSS projects’ community attributes). But see Lessig, Remix, supra note 76, at 180 (documenting an interview with Robert Young who said that “[regarding free software,] there’s no such thing as a community. It’s simply a bunch of people with a common interest.”)

827 See e.g Elkin-Koren, What Contracts Cannot Do, supra note 38, at 386-87; Shirky, Here Comes Everybody, supra note 72, at 278; Interview with Godwin, supra note 336.


829 Kieff, Coordination, Property, and Intellectual Property, supra note 131, at 357. See also Yochai Benkler, Sharing Nicely: On Sharable Goods and the Emergence of Sharing as a Modality of Economic Production, 114 Yale L.J. 273, 282 (2004) (arguing that non-price based social relations play the role of providing information and incentive for resource allocation in the sharing economy). Cf. Sunder, IP3, supra note 79, at 324, note 370 (proposing a cultural approach to IP laws that takes into account the relationship between individuals and communities).


831 Cf. Bollier, Silent Theft, supra note 5, at 32 (“[r]elationships in a market are impersonal, episodic, and based on monetary gain”), at 179-80 (arguing the conflicts between transacting shares of a for-profit and “the organic integrity of a community”); Enjolras, supra note 405, at 352 (stating that transactions involving personal links, gifts, and voluntary work are not coordinated by market price mechanism); Lessig, Remix, supra note 76, at 120-21 (arguing that the currency in commercial economies is money); Quiggin & Hunter, Money Ruins Everything, supra note 62, at 231 (“people act differently, and are expected to act differently in relationships mediated by money as opposed to relationships in other social contexts”); Zittrain, Future of the Internet, supra note 151, at 145 (“Wikipedia shows us a model of interpersonal interaction that goes beyond the scripts of customer and business”).
close relationship within a community also helps to solve the anti-commons problem. As Michael Heller pointed out,

“avoiding tragedy [of the anticommons] requires overcoming transaction costs, strategic behaviors, and cognitive biases of participants, with success more likely within close-knit communities than among hostile strangers.”

2. NPOs’ Unique Fit with the Community Relationship

The relationships between community members may be relevant to the prevalence of NPOs in the commons context. Several researchers have argued that compared to for-profit organizations and the government, NPOs usually better serve demands that come from informal or interpersonal networks, such as family, friends, and neighbors. This is because NPOs are better at producing relational goods, which represent “networks or relationships, or…interpersonal interactions with them.” According to Ben-Ner and Gui, “a dense network of relations based on mutual acquaintance, trust, and ongoing cooperation that facilitates joint action is an important facilitator, perhaps a necessary condition for the formation of NPOs.”

On the other hand, Frumkin wrote that NPOs “are ideal vehicles for forging networks of weak ties that link people together.” With a formal organization

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832 See supra Chapter 2 B.3.
834 See e.g. Ben-Ner & Gui, Theory of Nonprofit Organizations, supra note 104, at 16 (arguing that NPOs created better personal relationships among stakeholders than for-profit); Douglas, Political Theories, supra note 122, at 43 (citing the Wolfenden Committee’s 1978 report about voluntary organizations).
835 Id. at 14-16. See also LOHMANN, COMMONS, supra note 140, at 58 (“memberships in (and presumably the benefits of) different types of voluntary organizations are not exchangeable.”)
836 Ben-Ner & Gui, Theory of Nonprofit Organizations, supra note 104, at 19.
837 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 44.
structure, NPOs strengthen individuals’ sense of belonging to a community.838 The trust provided by NPOs enables individuals to easily find their connections to and enthusiasm for communities.839 Some researchers even believe that the “close-knit ties developed in communities” has provided indispensable foundations for NPOs that promote social movements.840

In summary, like those serving other close-knit communities, NPOs in the commons context often provide important inputs for a network of relations that facilitate collective action. Just as the Mozilla Foundation’s board member Behlendorf stated, one of the reasons that Mozilla was initially structured as a nonprofit is that its founders “don’t have the goal of monetizing every relationship.”841 Therefore, the community nature underlying the commons realm and NPOs’ unique comatibility with this nature helps explain why the NPO is the most ideal type of organization in which members of the commons communities can work collaboratively.842

3. NPOs, Communities, and Social Capital

The burgeoning NPOs and relevant communities in the commons realm also provide new directions for the research on the concept of social capital. According to Robert D. Putman, probably the most important scholar in relevant studies, social capital refers to “connection among individuals—social networks and the norms of

838 Id. at 32, 45.
839 Id. at 29.
841 Interview with Behlendorf, supra note 216.
842 In making this argument, I am aware that some F/OSS communities are developed or hosted by for-profit firms. For example, Sun Microsystems hosts the Jini and the NetBeans communities. See Goldman & Gabriel, Innovation Happens Elsewhere, supra note 54, at 55-59. Oracle acquired Sleepycat, a F/OSS database company, and, thus, hosts the Berkeley DB community. See Waters, supra note 137. Drawing from several successful examples, Professor Lessig describes how for-profits can build communities in the sharing economy. Lessig, Remix, supra note 76, at 179-224.
reciprocity and trustworthiness that arise from them.” Social capital comprises “features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit.” From his observation of citizens’ involvement in clubs, PTAs, unions, and other forms of socializing, Putman found that participation in group activities, the vehicle for creating and sustaining social capital, was on the decline in the United States. Putman believes that Americans over the past half-century have gradually withdrawn into increasingly isolated private lives. He is especially concerned with the decrease of interaction between volunteers. Therefore, he believes that there is a significant decline in civil engagement and social capital with negative consequences in contemporary America.

Nonetheless, Putman’s theory has faced several serious criticisms, one of which argues that it ignores new forms of organization and social capital. The NPOs and communities in the commons context can provide a solid basis for such criticism. Organizations, such as F/OSS foundations, CC, and Wikimedia Foundation, have enabled new communities that did not exist before the digital age. These organizations have connected citizens in an unprecedented way that across any geographical boundaries via the Internet. Advocacy NPOs, such as the EFF and PK, on the other hand, have connected constituency communities via mobilization, identifying and articulating problems and solutions of current IP system.

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845 Smith & Grønbjerg, supra note 143, at 230.
846 FRUMKIN, ON BEING NONPROFIT, supra note 102, at 42.
847 See e.g. Carroll, supra note 292, at 55-57.
848 Cf. FRUMKIN, ON BEING NONPROFIT, supra note 102, at 42(disagreeing Putman’s point and asserting that “[new] forms of interaction…have allowed people across the country…to find each other.”)
Therefore, large numbers of individual are bound together in unique social relations by the emerging NPOs and the communities they host. These NPOs and communities constitute an increasingly important part in our civil society. What these organizations have facilitated—norms, trust, and networks of cooperation and collaboration—is critical to building social capital. As NPOs’ formal organization structure and the digital network effectively decrease the costs of coordinating group activities, a new form of social capital can be sustained underlying various commons communities. Put differently, without a fairly robust stock of social capital, the nonprofit community activities will inevitably struggle. The growing nonprofit sector and wide participation in the commons scenario suggests the fact that new types of social capital have emerged and accumulated, which was overlooked in Putman’s aforementioned worry regarding the declining social capital.

849 As Clay Shirky points out, one cause for the declining social capital was the increasing costs of coordinating group activities. Shirky, Here Comes Everybody, supra note 72, at 193.
850 Cf. Benkler, Wealth of Networks, supra note 2, at 368 (noting the “weak tie” in social capital literature occasionally appears in digital social platforms).
851 As to the relationship between the nonprofit sector and social capital, see e.g. Clemens, supra note 687, at 208-11; Helmut K. Anheier & Lester M. Salamon, The Nonprofit Sector in Comparative Perspective, in The Nonprofit Sector: A Research Handbook 89, 93 (Walter W. Powell ed., 2006); Leete, supra note 797, at 170; Smith & Grønbjerg, supra note 143, 229-231.
852 See also Benkler, Wealth of Networks, supra note 2, at 366 (noting a new diversity of personal association with communities in the Internet age); Bollier, Silent Theft, supra note 5, at 41 (discussing social capital in the commons discourse).
CHAPTER 6 CONCLUSION

NPOs studied in this Dissertation have formed an unprecedented ecosystem that makes various commons-related activities possible. Without NPOs, the commons environment might be much less vigorous than it now is. Currently-prevailing NPO theories aid our understanding of NPOs’ role and behavior in the commons environment. Nevertheless, neither contract failure theory nor government and market failure theory provides a complete picture of NPOs’ role in the commons realm. Given the diversity of various NPOs, a theory about one type of NPOs does not translate easily to other types.\textsuperscript{853} Therefore, these theories may be regarded, to a large extent, as complementary rather than mutually exclusive, efforts to understand a heterogeneous sector operating in diverse economies.

In this Dissertation, I have identified access failure, collaborative failure, and licensing failure as the three major types of contract failure in the commons discourse. By clarifying the role of NPOs in correcting contract failures in the digitally-networked world, I illustrated how trust provided by NPOs is indispensable for commons governance. Diverging from the conventional wisdom associated with the Internet’s disintermediation effect, I use NPOs in the commons arena to argue that formal organizations are still necessary for decentralized production activities in cyberspace.

\textsuperscript{853} \textit{Cf.} DiMaggio & Anheier, \textit{Sociology of Nonprofit Organizations, supra} note 16, at 140 (noting that these two theories’ “capacity to explain variation in [nonprofit] activities within industries over time and space is limited.”)
Moreover, NPOs are a private response to various market and government failures. These failures include the captured copyright legislation, the copyright law itself, contract failure, and the under-provision and over-exclusion of intellectual resources. Through the lens of market and government failure theory, we can both understand the role of NPOs in conducting social experimentation and empowering individuals in our intellectual ecology. Moreover, NPOs occasionally act as independent innovators that harness individual values and that direct them toward significant collective ends. NPOs can, therefore, be analyzed as an organizational form able to correct various failures in our society.

Still, these traditional theories explain in only a limited way the NPO phenomenon that I have analyzed in this Dissertation. Contract failure theory can neither fully illuminate the effects of NPOs nor illustrate the important role played by the government and the law therein. The assumption of contract failure theory that consumers distrust for-profits, is prone to exaggeration in some NPO scenarios. Sometimes consumers choose NPOs simply because for-profit firms lack the incentive needed for the production of desired goods or services. Market and government failure theory, on the other hand, interprets government failure too narrowly. The theory’s hypothesis that NPOs respond only to the demands of minorities should undergo fine-tuned for the commons arena. Furthermore, NPOs and the market are not separate from each other. In fact, for-profits occasionally provide society with crucial public goods through partnership with NPOs. In this sense, the government and market failure theory’s assumption regarding market failure needs to be adjusted.
Finally, the commons environment, as opposed to the proprietary realm, is an ideal place in which NPOs can flourish. NPOs’ non-distribution constraint strengthens their compatibility with the non-proprietary nature, gift culture, and community attributes of the commons environment. However, this phenomenon does not mean that the nature of for-profits is incompatible with the commons economy. In fact, Google, RedHat, IBM, and many other for-profit companies have successfully built new business models by recognizing and embracing the nature of the commons. The baseline is not whether intellectual resources are used to make profits, but whether they are controlled exclusively.
## APPENDICES

### Appendix 1: List of Interviewees

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Organization</th>
<th>Title</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun. 19, 07</td>
<td>Keith Bostic</td>
<td>Oracle Corporation</td>
<td>Architect</td>
<td>Telephone</td>
</tr>
<tr>
<td>Jun. 26, 07</td>
<td>Mike Milinkovich</td>
<td>Eclipse Foundation</td>
<td>Executive Director</td>
<td>Telephone</td>
</tr>
<tr>
<td></td>
<td>Cliff Schmidt</td>
<td></td>
<td>Former Vice President of Legal Affairs</td>
<td>Telephone</td>
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<tr>
<td>Jul. 13, 07</td>
<td>Allison Randal</td>
<td>Perl Foundation</td>
<td>Member of the Board and former President</td>
<td>Telephone</td>
</tr>
<tr>
<td>Aug. 8, 07</td>
<td>David Ascher</td>
<td>Python Software Foundation</td>
<td>Former Executive Vice President</td>
<td>Telephone</td>
</tr>
<tr>
<td>Aug. 17, 07</td>
<td>Jim Zemlin</td>
<td>Linux Foundation</td>
<td>Executive Director</td>
<td>Telephone</td>
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<tr>
<td>Oct. 3, 07</td>
<td>Elspeth A. Revere</td>
<td>John D. and Catherine T. MacArthur Foundation</td>
<td>Vice President, General Program</td>
<td>Telephone</td>
</tr>
<tr>
<td>Oct. 5, 07</td>
<td>Catherine M. Casserly</td>
<td>William and Flora Hewlett Foundation</td>
<td>Program Officer of Education program</td>
<td>Menlo Park</td>
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<tr>
<td>Oct. 5, 07</td>
<td>Jack Fascher</td>
<td>William and Flora Hewlett Foundation</td>
<td>Communications Officer</td>
<td>Menlo Park</td>
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<tr>
<td>Oct. 11, 07</td>
<td>David Bollier</td>
<td>Public Knowledge</td>
<td>Co-founder and Member of the Board</td>
<td>Telephone</td>
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<tr>
<td>Oct. 22, 07</td>
<td>Ahrash Bissell</td>
<td>Creative Commons</td>
<td>Executive Director of ccLearn Project</td>
<td>San Francisco</td>
</tr>
<tr>
<td>Mar. 4, 08</td>
<td>Gigi B. Sohn</td>
<td>Public Knowledge</td>
<td>Co-founder and President</td>
<td>Telephone</td>
</tr>
<tr>
<td>Mar. 6, 08</td>
<td>James Love</td>
<td>Knowledge Ecology International</td>
<td>Director</td>
<td>Telephone</td>
</tr>
<tr>
<td>Mar. 6, 08</td>
<td>Manon Ress</td>
<td>Knowledge Ecology International</td>
<td>Director, Information Society Projects</td>
<td>Telephone</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Organization</td>
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<td>Mar. 10, 08</td>
<td>Michael W. Godwin</td>
<td>Wikimedia Foundation</td>
<td>General Counsel</td>
<td>San Francisco</td>
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<tr>
<td>Mar. 11, 08</td>
<td>Cindy Cohn</td>
<td>Electronic Frontier Foundation</td>
<td>Legal Director</td>
<td>San Francisco</td>
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<tr>
<td>Mar. 25, 08</td>
<td>David J. Kappos</td>
<td>IBM</td>
<td>Vice President and Assistant General Counsel</td>
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<tr>
<td>Apr. 4, 08</td>
<td>John Sullivan</td>
<td>Free Software Foundation</td>
<td>Manager of Operations</td>
<td>Telephone</td>
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<tr>
<td>Apr. 29, 08</td>
<td>Patrick O. Brown</td>
<td>Public Library of Science</td>
<td>Co-founder and Board Member</td>
<td>Stanford</td>
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<tr>
<td>May 5, 08</td>
<td>Greg Newby</td>
<td>Project Gutenberg Literary Archive Foundation</td>
<td>CEO</td>
<td>Telephone</td>
</tr>
<tr>
<td>May 6, 08</td>
<td>Brewster Kahle</td>
<td>Internet Archive</td>
<td>Director and Co-Founder</td>
<td>San Francisco</td>
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<tr>
<td>May 14, 08</td>
<td>Frank Hecker</td>
<td>Mozilla Foundation</td>
<td>Executive Director</td>
<td>Telephone</td>
</tr>
<tr>
<td>June 12, 08</td>
<td>Danese Cooper</td>
<td>Open Source Initiative</td>
<td>Board Member</td>
<td>Palo Alto</td>
</tr>
<tr>
<td>June 18, 08</td>
<td>Chris DiBona</td>
<td>Google</td>
<td>Open Source Program Manager</td>
<td>Mountain View</td>
</tr>
<tr>
<td>June 19, 08</td>
<td>Brian Behlendorf</td>
<td>Apache Software Foundation</td>
<td>Co-founder and Former President</td>
<td>Telephone</td>
</tr>
<tr>
<td>July 29, 08</td>
<td>Vera Franz</td>
<td>Open Society Institute</td>
<td>Program Manager of Information Society Program</td>
<td>Telephone</td>
</tr>
</tbody>
</table>
Appendix II: Interview Protocols

Interview Protocols 1

1. What are effective ways (e.g., mailing list, strong leadership, and etc.) to coordinate F/OSS code development?

2. How to build trust in a F/OSS community? (The trust includes, but not limits to, contributors’ trust in leadership, other contributors, and the community generally.)

3. When does a F/OSS community need a formal legal entity (such a for-profit company or an NPO) to host its project?

4. What are the general perceptions of “profit” and “commercial” among F/OSS contributors and the community?

5. Compared to an NPO, what is a for-profit company’s comparative advantage and disadvantage in hosting F/OSS communities?

6. How to develop sustainable relationship between the F/OSS community and the for-profit firms?

Interview Protocol 2

1. Can you talk the history of the organization? Why and how it is incorporated?

2. What is the organization main focus now?

3. What does the organization provide for the community?

4. How do you distinguish your organization from for-profits?

5. Does the organization work with the government or other for-profit company? If so, how?

6. What interest does the organization stand for?

7. What role does the organization play in the commons movement?

8. What is the most significant challenge faced by your organization?
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