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Elinor Ostrom and Charlotte Hess (eds.). Understanding Knowledge as a Commons – From Theory to Practice. Cambridge, Mass.; MIT Press, 2006.

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Elinor Ostrom and Charlotte Hess (eds.). *Understanding Knowledge as a Commons – From Theory to Practice*. Cambridge, Mass.; MIT Press, 2006.

In the digital age, access to information is unprecedented. The sheer quantity of information available to users of digital technology has led to the need to examine the implications of the availability of so much information. Within this context, several questions arise, including: (1) How does access to information create *knowledge*? (2) What is the nature of knowledge? (3) How is knowledge constructed, identified, and understood in a digitally mediated environment? Ostrom and Hess present examples of everyday ways in which these questions might appear. For instance, Internet users may encounter difficulties evaluating the credibility of information found online due to lack of author credentials. Seekers of patents for intellectual property may be less equipped to prove intellectual “ownership” of ideas because so much digital information is, by nature, shared. And the resulting trend toward over-patenting may constitute a threat to the free flow of information.

The collection of essays called *Understanding Knowledge as a Commons: From Theory to Practice*, edited by Elinor Ostrom, 2009 Nobel prize winner of Economic Science, and Charlotte Hess, Director of the Digital Library of the Commons at the Indiana University, is a compilation intended to introduce a new way of perceiving knowledge. Their work posits that in the digital age, knowledge must be conceptualized as a complex ecosystem, one that is both (1) a resource to be shared digitally by a group of people and (2) an entity that is subject to social dilemmas. The content of *Understanding Knowledge as a Commons* was the result of a 2004 meeting funded by the Andrew W. Mellon Foundation and hosted by Ostrom and Hess called, “Workshop on Scholarly Information as a Commons,” during which scholars from different disciplines attempted to define knowledge as a “commons,” from within which issues of intellectual property rights; information technology; traditional libraries; digital libraries; invention and creativity; collaborative science; citizenship and democratic processes; collective action; information economics; and the management, dissemination, and preservation of scholarly record would be conceived anew. The topics discussed during the two-day workshop would form the overarching themes discussed in the 12 essays of the subsequent book.

The book’s 12 chapters are divided into three parts, covering the issues of conceptualizing, protecting, and building a knowledge commons. In general terms, the first three chapters attempt to outline a system of rules that would mediate the conflict that is inherent to a commons system, as individual interests may collide when people work together. Ostrom and Hess contributed the first and third chapters. In Chapter One, Ostrom and Hess introduce their work by drawing on the historical background of the notion of a commons and defining the meaning of knowledge as a *good*. They highlight that knowledge requires the assimilation of information and the understanding of how to use it, which implies a dual functionality of knowledge, namely as both a commodity and a constitutive force of society. Hess and Ostrom differentiate between natural resources, which are depletable and rivalrous, and human-made resources (like information commons), which are non-depletable and non rivalrous, meaning that one person’s use of the resource does not limit or subtract from another person’s chance to use or build upon it. In the context of a knowledge commons, the phenomenon of free riding as a social dilemma raises questions about the preservation of knowledge (since information might disappear if no one contributes new data in order to maintain a resource); thus, the institutional change described throughout the book describes libraries and archives as the stewards of knowledge preservation.

Chapter Two, by David Bollier, sets the theoretical framework of the knowledge commons, using the notion of a commons as a vantage point for further scholarly communication. Bollier

emphasizes the ability of the term commons to help us identify problems and social dilemmas that affect both natural and human-made commons such as congestion, overharvesting, pollution, inequities, other degradation and to propose effective alternatives for social rules, appropriate property rights, and management structures. Ostrom and Hess stress at the beginning of Chapter Three that “trying to get one’s hands around knowledge as a shared resource is even more challenging when we factor in the economic, legal, technological, political, social, and psychological components that make a *global commons*” (p.41 emphasis added). In order to integrate the different disciplines concerning knowledge, the authors constructed the Institutional Analysis and Development Framework (IAD) based on the *Tragedy of the Commons*, an article by biologist Garrett Hardin. Hess and Ostrom stress Hardin’s work because he proposed privatization and government control in order to prevent social dilemmas, which are caused by colliding individual self-interests among users of shared spaces (commons). Efficient management of a common resource is not free of social dilemmas, and, according to Ostrom and Hess, effective management of a common resource depends on common interest in preserving a public good, which can be an incentive strong enough to collectively develop context-specific rules. Consequently, the IAD is a universal framework with general variables which can be adapted to the individual, local context of commons within the broader, global context of the Internet. The implications addressed in this chapter highlight the institutional change which affected libraries and archives as the stewards of knowledge preservation.

While the first part of the book sets the stage for deeper explanation of the knowledge commons and the application of the IAD by authors from different disciplines, the subsequent parts build on the first three chapters, which use the conceptual apparatus established by Ostrom, Hess, and Bollier to discuss topics within the knowledge commons. Part II of the book expands the context, discussing the protection and preservation of digital knowledge and observing the ways in which legislation in U.S. copyright and corporate interests may threaten open access to cultural and scientific knowledge. Finally, Part III, “Building New Knowledge Commons,” integrates the final five chapters for a practical approach, drawing from existing open access projects to show the need for both intellectual property as a tool and open access as an essential cornerstone for democratic actions within the framework of a local common.

The issues the authors of these chapters address include open access, intellectual property, incentives for voluntary contribution, collective action and civic engagement, the free or open-source movement, and institutional change, which are elaborated on the basis of existing examples using scholarly communication as a vantage point. For example, Kranich details the efforts of SPARC, the Scholarly Publishing and Academic Resources Coalition, an alliance of research libraries, universities, and organizations. She emphasizes that the scholarly community can change the terms of the discourse about who “owns” knowledge by adapting the commons paradigm that Bollier outlines in Chapter Two. According to Kranich, open access publication has increased the frequency of citations, which builds the reputation of a scientist.

The most practical account of a knowledge commons is the last chapter, by James C. Cox and J. Todd Swarthout, who recount the development of EconPort, a digital library for microeconomics, maintained by its users using open-source software. The chapter highlights the difficulties open access libraries face regarding (1) volunteer contributions to their collections and concerns of intellectual property rights, (2) the need for initial funding in order to purchase software for a digital archive, and (3) the need for expertise to run and maintain the software. Shubha Gosh tackles intellectual property rights as a tool in Chapter Eight and emphasizes its role in preventing a misappropriated work from being sold in the marketplace. Gosh argues in this chapter that open access must not necessarily mean costless access to information and that intellectual property rights ensure the creative autonomy of an author;

thus, he says, rights to intellectual property are essential as an incentive for authors and to guarantee quality in open access information.

Returning to an earlier part of the book, James Boyle considers in Chapter Five, the possibility of open access to scholarly information. He juxtaposes progressive and populist arguments. He poses the question of where to draw the balance between the dangers of collective irrationality and restrictions to knowledge. Boyle concludes that we do not know the benefits and costs that wider access to cultural and scholarly material could bring. The question of control and impact of the Internet are yet to be evaluated since digital technology advances at an unprecedented speed. According to Ostrom and Hess, “Each commons has distinctive dynamics based on its participants, history, cultural values, the nature of the resource, and so forth” (p.43). Consequently, evaluations of knowledge commons will be complex since one must necessarily consider the local context of individual knowledge, which will vary due to the range of paths of communication patterns within the disciplines of the scholarly community as discussed in detail by Wendy Prady Lougee in Chapter 11.

Understanding Knowledge as a Commons is a valuable text which comprises information around a specific interest, namely the management of the Internet as a resource that has brought about profound changes for individuals and institutions across nation state borders. The practical value of the book lies within the universal framework outlined in its first part to construct an understanding of a digital knowledge commons. Each author points to valuable resource tools meant for practical implementation and interpretation of knowledge. For example, detailed end notes in most of the chapters connect the reader to open access resources; thus, *Understanding Knowledge as a Commons – From Theory to Practice* is an archive for students and professors interested or involved in open access projects.

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