Scholarship in the Digital Age: Information, Infrastructure, and the Internet
by Christine Borgman. Cambridge, MA and London: MIT Press, 2007. 336 pp.
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Innovations in information access *via* semantic Web and digital library technologies have set scholarly communication and research dissemination on a critical trajectory. But emerging technologies alone cannot define the infrastructure of digital scholarship, much less the specialized contents and disparate cultures of the humanities, social sciences, and sciences, respectively; the historical and socio-economic foundations of academic publication and disciplinary boundaries have an abiding influence on the nature of, and access to, digital scholarship. In *Scholarship in the Digital Age*, Christine Borgman presents a thorough appraisal of how the digital age affects the nature, momentum, and mechanisms of scholarly research dissemination. Borgman delineates the vocabularies prevalent in contemporary scholarly infrastructures and situates them in social, policy, technical or historical contexts.

The author's goal in this book was, "to frame research questions about practices, incentives, disincentives, and solutions for an e-Infrastructure and how those questions may vary by discipline and situation" (p. 264). Borgman (2007) describes the scholarly communication system in terms of the elaborate relationships between scholars, universities, and publishers; following Dutton (1999), Borgman considers scholarship's competitive climate to be an "ecology of games" with dynamic interactions and unpredictable outcomes. Borgman demonstrates an idealistic bias as she writes how "[w]hen the interests of the many stakeholders are in balance, the system works well…" (p. 264).

The intention of the author to initiate a conversation about digital scholarship, coupled with the book's noteworthy readability, combine to invite a multiplicity of interpretations and charge readers to envision, and account for, the myriad of unattested connections between scholarship and technology in modernity. In order for a book to successfully solicit the kind of reflection and focused treatment that Borgman (2007) calls for, it must justify its mandate with respect to established authority. To substantiate the need for (re)building an information infrastructure for scholarly research, the author could begin by establishing an authority schema "from the ground up" (i.e. from data to published findings). Instead, the text's logic departs from a pure scientific model as the author convincingly advances the most salient assumption for future dialogue on digital scholarship. Borgman (2007) posits that as the social and behavioral context of scholarly communication intersects vitally with public policy and technological innovation, the information practices of the various stakeholders (i.e. researchers, publishers, librarians, etc.) must be carefully analyzed: (1) to design equitable information infrastructures for the information society in general, and (2) to create sustainable infrastructures that not only cater to the needs of disparate academic disciplines, but that also facilitate collaborative research in particular.

The book presents a well-referenced appraisal of scholarly information infrastructures, but could not completely incorporate equal treatment of the implications for the sciences, social sciences and humanities (as the author aimed to introduce). The book succeeds in offering overview of contemporary scholarly communications, including: print forms and genres; types and roles of data across disciplines; and

academic reward systems. Borgman next engages the continuities and discontinuities in scholarly communication in general, and in the information sharing practices of specific academic disciplines. The most substantial contribution to interdisciplinary scholarship occurs near the end of the book, unsurprisingly, in its lengthiest chapter, "Disciplines, Documents, and Data." Borgman provides unparalleled insight and masterful style to explore the intersections of academic disciplinarity and information's content layers from raw data to published monographs, and from protected intellectual property to the public domain. As networks of scholars initiate conversations, they disseminate data and research that are suggested to increasingly share the competition for popularity with information of disparate certifications and value schemas.

The author presents a framework for future initiatives, emphasizing, "[f]irst and foremost is the need to invest in content, with the goals of building an infrastructure [for] information" (p. 263). This priority is an important component to nurturing scholarly infrastructures, but Borgman and others must also situate it with respect to the broader goal of (re-)building educational infrastructures in the digital age for future generations. The author states that, "the content layer can itself be viewed as an infrastructure, and considerable progress is being made in the requisite standards and structures" (p. 263), preferring to leave out discussion of specific standards; Borgman is more concerned with providing a thorough description of existing practices and the historical context of the issues in scholarly communication than delineating their minute technical details.

As a scholar of digital scholarship, Borgman is practically peerless, as is her latest book; there is little that can be scrutinized about previous treatments or contrasting opinions (see Lessig, 2004). This book should serve as a seminal work for library and information science (LIS). The work contributes to the librarianship trope within LIS by outlining issues relevant to cataloguers who need better description and representation methods as users organize and represent their personal documents and build their own libraries, digitally.

The tradition of scholar's needing to be library-savvy has not only survived the movement of scholarship into the digital age, but the level of familiarity necessary to work effectively in academia and to compete successfully in the digital environment of scholarly productivity—publishing—has increased dynamically. Borgman (2007) should also be considered a foundational work for the information technology dimension of LIS. IT professionals and educators must address the need for adaptable interfaces and the evolving nuances of information infrastructure that the book both describes and predicts.

Although Borgman has again (see Borgman & Furner, 2002) succeeded in asserting a vocabulary for current and future scholarly information practices, one minor shortcoming may be that in attempting to relate her terminology to each domain of scholarship (science, social science, and humanities) with equal treatment, she has marginalized some essential features that make each domain unique, in name and practice. The most apparent disjunction occurs as Borgman extensively analyzes the term "data." By trying to apply this epistemologically-charged concept across all of scholarship (especially, humanities), the interdisciplinary framework Borgman champions throughout the book, fails to function as effectively, and threatens to estrange the humanities-oriented audience to whom Borgman has elsewhere (see Borgman, 2000) been consistently, concertedly attentive.

Finally, researchers and students of library and information science as well as those seeking introductory understanding of contemporary scholarship may apply Borgman's treatment of scholarly information behavior as a point of departure for future social and policy research. Borgman has adeptly extended her previous analysis of information infrastructures disseminated in *From Gutenberg to the Global Information Infrastructure* and thereby reinterpreted the established assumptions of scholarly communication, bringing them to bear and to burgeon in earnestly interdisciplinary academic discourse.

References

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