Florida State University Libraries

2014

The Roles of Digital Libraries as Boundary Objects within and Across Social and Information Worlds

Adam Worrall

FLORIDA STATE UNIVERSITY

COLLEGE OF COMMUNICATION AND INFORMATION

THE ROLES OF DIGITAL LIBRARIES AS BOUNDARY OBJECTS

WITHIN AND ACROSS SOCIAL AND INFORMATION WORLDS

By

ADAM WORRALL

A Dissertation submitted to the
School of Information
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Degree Awarded:
Summer Semester, 2014

Adam Worrall defended this dissertation on July 3, 2014.

The members of the supervisory committee were:

Michelle M. Kazmer

Professor Directing Dissertation

Deborah J. Armstrong

University Representative

Gary Burnett

Committee Member

Sanghee Oh

Committee Member

The Graduate School has verified and approved the above-named committee members, and certifies that the dissertation has been approved in accordance with university requirements.

To everyone that has

shown me love and support…

…but especially, to Mom and Dad.

Thank you for everything.

I hope I make you proud.

ACKNOWLEDGEMENTS

Finally, it may take a community to raise a PhD graduate, but it takes two amazing parents to raise a kid right. Thanks, Mom and Dad, for keeping me grounded while letting me reach for the stars.

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

Digital libraries must support the existing and emergent communities they serve, lest social opportunities to seek, use, and share information and knowledge become diminished compared to physical libraries. Despite many calls for a social view of digital libraries and the rise of social informatics and sociotechnical systems research, there is continuing need to examine how digital libraries support communities and facilitate collaboration. This research improves our understanding of the organizational, cultural, collaborative, and social contexts of digital libraries, conceptualizing *social digital libraries* to include content, services, and organizations, with a focus on facilitating information and knowledge sharing.

A sequential mixed-methods design, drawing from the tenets of social informatics and social constructionism, explores and describes two cases of social digital libraries, LibraryThing and Goodreads, under a theoretical framework focusing on Star's boundary object theory and incorporating Strauss's social worlds perspective and Burnett and Jaeger's theory of information worlds. This framework conceives of social digital libraries adapting to the local needs of many communities, reconciling and translating meanings across them; supporting coherent norms, types, values, behaviors, and organizations; serving as sites and technologies for information behavior and activities; and supporting convergence of broader communities around their use.

Content analysis of messages in five LibraryThing and four Goodreads groups, a structured survey of users, and semi-structured qualitative interviews with users identifies three roles LibraryThing and Goodreads play, as boundary objects, in facilitating and supporting translation, coherence, and convergence: (a) establishing community and organizational structure; (b) facilitating users' sharing of information values; and (c) building and maintaining social ties, networks, and community culture. Potential implications for digital library design and practice include highlighting translation processes and resources; providing user profiles and off-topic spaces and encouraging their use; taking a sociotechnical approach that tailors technology and community features to the right audiences; and facilitating the establishment of shared structure, values, and ties and boundary spanning activities. Further research on social digital libraries and in social informatics and information behavior should examine deeper facets of these roles, other digital libraries with less overt social features, and other ICTs in light of the processes of coherence and convergence, taking a boundary-sensitive view of information phenomena in community and collaborative contexts.

CHAPTER 1

INTRODUCTION

This dissertation presents a research study titled *The Roles of Digital Libraries as Boundary Objects Within and Across Social and Information Worlds*. As the name suggests, it examines the roles of two digital libraries, as social phenomena and boundary objects, in information behaviors and activities taking place within, between, and across multiple communities, social worlds, and information worlds. This introductory chapter begins with an overview of the research purpose, a statement of the problem being considered, and the significance of the research. It then presents the research questions explored and the theoretical framework and approach applied in this study. The chapter concludes by reviewing the research design used, the assumptions made in the study, and making an initial presentation of the benefits and implications of this research. Chapter 2 presents a thorough literature review of relevant research; Chapter 3 presents the details of the method and research procedures; Chapter 4 presents a detailed review of the study findings; and Chapter 5 discusses and synthesizes these findings, answers the research question, and considers in detail the implications of this research.

1.1. Purpose

The purpose of this research, taking a social perspective on digital libraries, is to improve understanding of the organizational, cultural, institutional, collaborative, and social contexts of digital libraries, contexts with important effects on users, communities, and information behavior. Drawing from Borgman (1999) and other literature (see Chapter 2), a *social digital library* can be defined as (a) having one or more collections of digital content collected on behalf of a user community; and (b) offering services, relating to the content, by or through the digital library to the user community. It is, or is part of, one or more formal or informal organizations that manage these content and services, focusing on facilitating information and knowledge creation and sharing (after Lankes, 2009, 2011) and excluding different primary motivations (e.g. selling products). These characteristics should be considered in light of the various contexts they inhabit, most of all the social contexts.

1.2. Problem Statement and Significance

Despite the expressed need—as far back as Bush (1945)—for social contexts of information to be considered under a social paradigm, many early information retrieval systems focused on the technology (see e.g. Raber, 2003; Smith, 1981, 1991). Echoes of paradigmatic

1

unrest (cf. Ellis, 1992; Raber, 2003) are seen in divisions on how digital libraries should be seen (Borgman, 1999) and Brown and Duguid's (2002) rejection of technology-centric solutions to information and knowledge problems. Nevertheless, many have stated and repeated calls for consideration of digital libraries as information systems constructed in social context (Ackerman, 1994; Frumkin, 2004; Gazan, 2008; Levy & Marshall, 1995; Lynch, 2005; Marshall & Bly, 2004; Neuhold, Niederée, & Stewart, 2003; Van House, 2003), as is discussed in Chapter 2. Viewing digital libraries as social parallels the roles of physical libraries (Pomerantz & Marchionini, 2007, p. 506), which are not just physical collections and technical services but physical and conceptual spaces "link[ing] people to ideas and to each other." It parallels the definition found in the DELOS Reference Model and associated Digital Library Manifesto (see Candela et al., 2007, sec. 2, para. 3), which included (a) an organization; (b) the collection and management of digital content; and (c) functionality and services associated with the content.

Non-social digital libraries do not offer strong support for the multiple communities that use them and for collaboration taking place within and across communities. Since a traditional role of physical library environments is to serve as inherently social spaces (Pomerantz & Marchionini, 2007), digital libraries should improve their support for social, collaborative information behaviors and activities, lest social opportunities to seek, use, and share information and knowledge become diminished or lost as libraries become increasingly digital and hybrid in nature.

The phenomena of *communities* and *collaboration* are key elements of this problem. A user community may consist of smaller communities or groups, adopting the subcultural view pioneered by Fischer (1975) and incorporating flexible use of conceptions of community used in calls for social digital libraries and in related research areas (see the review in Chapter 2). The content collected by the digital library is intended to be used by these communities; the services it offers are for the communities; and the organization(s) it is associated with are a form of community. A major objective of digital libraries is to support, construct, and build these differing kinds of "knowledge communities" that use their content and services (Bearman, 2007, p. 245). Digital libraries can and should improve and build these communities by supporting their "internal workings … and their links to the rest of the world" (Agre, 2003, p. 227), becoming bound to these communities (Star, Bowker, & Neumann, 2003). Supporting these workings and links requires supporting social contexts: collaboration within and across

2

communities, the building and construction of new and existing communities, and individual and collaborative information behavior. Such collaboration centers around a common overall project, goal, interest, or practice (Gunawardena, Weber, & Agosto, 2010), although serendipitous opportunities for collaboration within and between communities should not be dismissed, given the commonality and value of serendipity as information seeking behavior (see Case, 2012, p. 101; Erdelez, 2005; Foster & Ford, 2003; Talja, 2002). The literature on communities and collaboration as it relates to information science and cognate areas is reviewed at greater length in Chapter 2.

The literature indicates a clear need for theoretical and practical research to see if and how digital libraries support and facilitate collaboration, communities, and other social contexts in light of the most appropriate conceptions of these contexts in theory and practice. The field of digital library research, and by extension the information science field, will benefit from the fuller understanding of the roles and uses of social digital libraries within and across worlds and communities that this study helps provide. Significant implications exist for digital library design, usability, and development; the provision of services by digital library practitioners; and use of digital libraries by users and user communities. The study further benefits related research in the areas of social informatics, information behavior, and online communities. These implications and benefits are discussed further in section 1.7 below and in Chapter 5.

1.3. Research Questions

This dissertation study focuses on two cases, LibraryThing and Goodreads, which are digital libraries and web sites for readers and lovers of books. LibraryThing and Goodreads feature digital content—from outside organizations and users—collected for their users and user communities, services relating to the content and for their user communities, and formal and informal organizations managing the content and services; while they are business endeavors, their primary purpose is to encourage information and knowledge sharing among book lovers, and as such they are social digital libraries. Their nature as large, public, multi-faceted digital libraries and web sites makes them appropriate cases for the purpose of this study. Details of the setting are given in Chapter 3. The following two research questions were chosen to satisfy the purpose of this study within this setting:

RQ1.   What roles do LibraryThing and Goodreads play, as boundary objects, in translation and coherence between the existing social and information worlds they are used within?

RQ2.   What roles do LibraryThing and Goodreads play, as boundary objects, in coherence and convergence of new social and information worlds around their use?

The concepts of boundary objects, translation, coherence, convergence, social worlds, and information worlds used in these research questions are part of the theoretical framework for this study, explained in section 1.4.2 below.

1.4. Theoretical Framework and Approach

1.4.1. Social Paradigm

This research falls under the social paradigm of information science, a view seeing information as a broad phenomenon having "social significance" (N. Roberts, 1976, p. 249) which "must be examined in the context of its social nature" (Raber, 2003, p. 222). Information is subjective within this context, differing in meaning and interpretation between different individuals, groups, communities, organizations, cultures, and societies (Jaeger & Burnett, 2010; Talja, Tuominen, & Savolainen, 2005). Data, information and knowledge may be within information systems, outside these systems, in the heads of users, or be socially constructed by groups and communities (Tuominen & Savolainen, 1997). Research in the social paradigm examines the "production of knowledge" (Karamuftuoglu, 1998, p. 1071), where "information acquiring and processing capabilities are not individual but social manifestations" (Brookes, 1975, as cited in N. Roberts, 1976, p. 254). Users are active participants in the social construction and production of information and knowledge and may take on multiple roles in the resulting discourse (Talja et al., 2005).

1.4.2. Theoretical Framework

This dissertation research draws on a synthesized theoretical framework consisting of three theories, discussed and developed at greater length in Chapter 2.[1] The primary theory is Star's (1989; Star & Griesemer, 1989) *boundary object theory*, which conceives of *boundary*

---

[1] While this dissertation research proceeded, the theoretical framework has also been presented as part of posters, conference papers, and talks (see Worrall, 2013a, 2013b, 2013c, 2014).

objects as crossing the boundaries between multiple communities, being used within and adapted to many of them "simultaneously" (p. 408). Such boundary objects, which may be abstract or concrete, have weak structure when used across communities, but are seen as having strong structure when created and used in individual communities (p. 393). The "different" and overlapping meanings they have across communities can cause "mismatches," which require negotiation and translation (p. 412). Successful negotiation requires careful management of the boundary objects, their representations, and the interfaces they provide between social worlds. Maintaining "coherence" across and between social worlds is a critical role of boundary objects (p. 393).

Star and Griesemer drew on Strauss's (1978) *social world perspective*, the second of the three theories included in the framework for this study (see also Clarke & Star, 2008). Strauss built his social worlds perspective on the work of Shibutani (1955), who argued there is a great "variety of social worlds," each with its own "organized outlook" based on the norms, beliefs, interaction, and communication of a given group of people (p. 566). Strauss (1978) proposed *social worlds* consist of "activities, memberships, sites, [and] technologies" in relation to social change (p. 121). A social world includes

- "at least one primary *activity* … strikingly evident";
- "*sites* where activities occur";
- "*technology* … [for] carrying out the social world's activities"; and
- in established social worlds, "*organizations* … to further one aspect or another of the world's activities" (p. 122; emphasis added).

To these four key concepts, Strauss added social worlds could and would "intersect … under [various] conditions" and segment into smaller subworlds given sufficient analysis (p. 122).

The final theory making up part of the theoretical framework used in this study is Burnett and Jaeger's (2008; Jaeger & Burnett, 2010) *theory of information worlds*. Burnett and Jaeger built on Chatman's theory of normative behavior (Burnett, Besant, & Chatman, 2001; Pendleton & Chatman, 1998), but wanted to move beyond its limitation in small worlds. Chatman had used the term *information world* as early as the 1980s (see Chatman, 1983, 1987, 1991, 1992, 1996), but left it ill-defined, requiring its meaning to be interpreted based on her views of small worlds and social worlds. In developing their theory of information worlds, Burnett and Jaeger saw to be

more explicit, combining Chatman's work with Habermas's on lifeworlds and the public sphere. Besides information worlds themselves, five additional concepts are part of the theory:

- *social norms*, or the "standards of 'rightness' and 'wrongness' in social appearances";
- *social types*, "the [social] classification of a person" (Burnett et al., 2001, p. 537);
- *information behavior*, "the full spectrum of normative [information] behavior … that are available to members of a … world" (Burnett & Jaeger, 2008, "Small worlds" section, para. 8);
- *information value,* relating to the value judgments of different information within and across worlds; and
- *boundaries*, "the places at which information worlds come into contact with each other and across which communication and information exchange can—but may or may not—take place" (Jaeger & Burnett, 2010, p. 8).

The resulting *information worlds* are social spaces of varied sizes, settings, and shapes, which may be contiguous or overlapping. The theory allows for "multi-leveled" analysis of these worlds and their information-based interactions (p. 30).

1.4.3. Approach

This research conceives of digital libraries as socially constructed phenomena, following the tenets of the social paradigm, social informatics, and social constructionism. It focuses on the individual and social information behaviors of the users and communities that use a digital library, placing special emphasis on collaborative and community-building behaviors. Because they are used by and cross the boundaries of multiple social worlds, information worlds, and communities, social digital libraries are socially constructed boundary objects (Van House, 2003). Under the three theories mentioned above, they should

- adapt to the "local needs" (Star, 1989, p. 46) of as many of these worlds and communities as possible;
- reconcile and translate the "meanings" and understandings across these worlds to allow users to "work together" (Star & Griesemer, 1989, pp. 388–389), collaborate, and interact;
- support the emergence of localized and common social norms, social types, information values, and information behaviors shared—to varying and potentially

overlapping extents—by the different information worlds using them (Burnett & Jaeger, 2008; Jaeger & Burnett, 2010); and

- act as common sites and technologies for users to engage in information-based activities (Strauss, 1978), including collaboration, information sharing, and knowledge sharing.

In acting as boundary objects, social digital libraries should support the possible emergence of a broader community (information world, social world) as the social digital library converges, coalesces, and reconciles portions of the multiple communities it serves.

1.5. Research Design

This dissertation study employed a mixed methods research design, using qualitative and quantitative methods together to combine their strengths and minimize their weaknesses; improve validity, reliability, and trustworthiness; and obtain a fuller understanding of uses of social digital libraries as boundary objects within and across social and information worlds. The research design is a variation on Creswell and Plano Clark's (2011) multiphase design incorporating elements of their explanatory sequential and exploratory sequential designs. Qualitative and quantitative data was collected and integrated in sequence; qualitative data was prioritized, but not at the expense of quantitative data collection; multiple methods were used within the one study; and the study was and is based on the theoretical framework discussed above and the tenets of the social paradigm, social informatics, and social constructionism.

Three methods of data collection were used, with the choice of research design following the process proposed by Ridenour and Newman (2008) and taking the approach to thought suggested by these authors, Creswell and Plano Clark (2011), and Greene (2007). The selection of this design and these methods was based on the purpose, setting, and research questions discussed above. The three methods used to collect data were:

- *content analysis* of messages in LibraryThing and Goodreads groups;
- a structured *survey* of LibraryThing and Goodreads users; and
- semi-structured qualitative *interviews* with users of LibraryThing and Goodreads.

The holistic combination of these methods, interrelated together in a multiphase design and combined with the theoretical framework discussed above, allowed for exploratory and descriptive research on social digital libraries as boundary objects incorporating the strengths of quantitative and qualitative methods, the viewpoints of multiple perspectives, and a multi-leveled

approach to analysis. The research design and the application of these methods in this dissertation research are discussed in detail in Chapter 3.

1.6. Assumptions and Limitations

The study makes a few assumptions and has limitations, although their impact has been minimized as best as possible. The literature review presented in Chapter 2 is assumed to include all relevant literature; while it is always possible something has been missed, best efforts have been made to situate this study in a complete, accurate picture of the existing research, practice, and theory on social digital libraries. My biases and predispositions as a researcher have influenced the choice of paradigms, approaches, theories, and methods, but it is believed their use in this study is appropriate and was justified throughout. Data collection was limited to the given research setting, LibraryThing and Goodreads, and to users of nine groups across the two sites. Results from the survey cannot be generalized due to the sampling procedures that were necessary to use, but the results of all three methods are believed to have sufficient transferability to apply to LibraryThing and Goodreads as a whole and have some transferability to other research settings, leading to potential implications about social digital libraries and related areas of study. Further research is necessary to confirm this transferability. This is not participatory research—as I am not a frequent user of either site beyond the bounds of this study—and so internal knowledge of the two is limited (and was more so at the beginning of the study), but their nature as large, public, and multi-faceted digital libraries allows the findings to have more transferability beyond the two cases and nine groups studied here. The sampling methods used limit the broader applicability of the findings, but measures were taken (see Chapter 3) to help ensure the results are as representative and transferrable as possible given other constraints at hand. The study assumed prospective participants were willing enough to complete the survey and interview phases of the study, and sufficient participants were found; compensation was provided for the survey to help encourage participation. The study assumed limited time and resources, as is true in any research study. I believe the appropriate balance was kept between providing rich, complete, descriptive data and ensuring the dissertation was completed within the time and with the resources available. Details of the limitations of the study can be found in Chapter 5, section 5.6.

1.7. Benefits

As mentioned earlier in this chapter, a traditional role of physical library environments is to serve as inherently social spaces (Pomerantz & Marchionini, 2007). The field of digital library research should benefit from this study's treatment of digital libraries as social spaces, examining their support for social, collaborative information behaviors and activities. Studies of social digital libraries grounded in theory, practice, and data, like this one, can help ensure social opportunities to seek, use, and share information and knowledge are not diminished or lost as libraries become increasingly digital and hybrid in nature. My dissertation helps toward providing a fuller understanding of uses of social digital libraries as boundary objects within and across social worlds, information worlds, and communities, with many potential benefits and implications.

Many of these uncover ways that the design and practice of social digital libraries may better support and facilitate the coherence and convergence of the communities of their users. Others speak to the importance of considering the full, sociotechnical context of digital libraries in use by individuals, communities, and organizations. There are wider-ranging implications, when the findings of this study are considered in context of other literature, for research on social digital libraries and in the related areas of social informatics, information behavior, and online communities research. Examining many different communities, phenomena, and platforms— including other digital libraries, such as those with less overt social features than LibraryThing and Goodreads—in relation to the framework, approach, and perspective taken here can help build a broad, ongoing boundary-sensitive research agenda. Details of these benefits and implications are given in Chapter 5.

Participants can receive indirect benefits from the increased knowledge and understanding researchers will have of the potential roles of social digital libraries within and across communities. They may benefit from the implications of the study findings as they relate to the design and development of digital libraries they may use (such as LibraryThing and Goodreads) and the provision of services to them in and by these digital libraries. Users of social media, social networking, and social Web services and sites will benefit over time from the broader implications of the results and conclusions of this study and related literature.

1.8. Conclusion

This chapter has presented an overview of the research problem of interest in and purpose of this dissertation research; the questions that were to be answered; and the approach, methods, and theories used in answering them. Chapter 2 presents a thorough review of the literature of importance and relevance to the study of social digital libraries as boundary objects within and across social and information worlds, examining research on digital libraries, communities, collaboration, and social digital libraries and the theoretical framework used in the study. Chapter 3 provides a detailed look at the research design and methods that were used, including the research setting, method choices, procedures for each method, and means of analysis. Chapter 3 further discusses the management of data; measures taken to improve validity, reliability, and trustworthiness; and ethical considerations. Chapter 4 presents a descriptive look at the findings from this study organized by the three methods used: content analysis of messages, a survey of users, and interviews with users. Chapter 5 provides synthesis—serving as briefer, higher-level summary of the findings—and discussion of the answers to the research questions, relations between these findings and the research literature, and implications for design, practice, research, and theory.

CHAPTER 2
LITERATURE REVIEW

To conduct research on a given topic and build our collective understanding of it, significant knowledge of what has come before is necessary. This chapter provides this necessary context, reviewing the literature of importance and relevance to the study of social digital libraries as boundary objects within and across social and information worlds. It first looks at digital libraries and differing conceptions held of them by researchers and practitioners. Next, conceptions of communities and collaboration, two phenomena of great contextual importance to social digital libraries, are examined. Further discussion of social digital libraries illustrates their place within this greater context. Previous research on social digital libraries, including studies, models, and frameworks with varying degrees of success, is reviewed next. The chapter then presents a brief review of literature on virtual book clubs followed by an extended review of boundary object theory, the central part of a well-grounded, context-sensitive, flexible theoretical framework for studying social digital libraries. The development of this framework based on boundary object theory, the social world perspective, and the theory of information worlds is also presented. The chapter concludes with a brief discussion of the implications of this framework for social digital libraries.

2.1. Digital Libraries

2.1.1. Pre-History

Bearman (2007) dates the term *digital libraries* to 1991, with common use dating to 1993. The research stream and concept can be extended further back (see Lynch, 2005) to Kahn and Cerf (1988); earlier work on databases, online public access catalogs, and information retrieval systems; and as far back as Licklider (1965), Bush (1945), and Otlet (see e.g. Rayward, 1997). Bush's (1945) memex concept may not have been a digital library as we would see it today, but one can consider it a forerunner of digital libraries, information systems, and the Internet as a whole. Smith's (1981, 1991) citation analysis of documents citing Bush's ideas found citations picked up after 1980, which she attributes "at least in part to the association of Bush with concepts similar to those underlying hypertext" (p. 264), a key element in most modern digital libraries. She used content analysis to break citations into five categories; the majority fell into the first, historical background or perspective. This indicates Bush's work as an important milepost in and beginning of the history of information systems and the understanding

of the problems surrounding information organization, seeking, and use; it was seen as "the starting point of modern information science" (Smith, 1981, p. 352). Hypermedia (as discussed by Smith, 1991) and digital libraries (see Kahn & Cerf, 1988; Lynch, 2005) build on much of this work in information retrieval; Smith (1991, pp. 269–270) alludes to what would become digital libraries for specialized communities. Bush is an important founding influence on information science and a key originator of the concepts and ideas behind digital libraries.

"By the mid-1980s," according to Lynch (2005, para. 4), "there were systems … that might reasonably be considered digital libraries at least by some definitions" and early concepts of what digital libraries might be. Kahn and Cerf (1988), providing the earliest modern conception, defined a digital library as "a rich collection of archival quality information … of current and possibly only transient interest" which blended "the conventional archive of current or historically important information and knowledge … with ephemeral material such as drafts, notes, memoranda and files of ongoing activity" (p. 3). Kahn and Cerf focused on the idea of a digital library as a collection of varied data, information, and knowledge, and as part of a broader Internet-based network of digital libraries.

2.1.2. Emergence: Two Differing Conceptions

When the term became common in the early-to-mid 1990s, U.S. federal agencies engaged in major funding efforts, under the Digital Library Initiative (DLI) banner, to spur the development of digital libraries. In these still relatively early years, "already the term … [was] used to describe [many] entities and concepts" (Borgman, 1999, p. 228). Reviewing these, Borgman found two differing conceptions of what a digital library is. One definition, followed by many researchers at the time, considered digital libraries as "[digital] content collected on behalf of user communities" (p. 229). This view developed out of a National Science Foundation (NSF)-sponsored "Social Aspects of Digital Libraries workshop" in 1995 (p. 234); it was a broad extension of Kahn and Cerf's (1988) definition. Another conception, followed by many librarians and other practitioners, considered digital libraries as "institutions or services" (Borgman, 1999, p. 229). This conception stemmed from the Digital Library Federation's (DLF) definition, first given by Waters (1998, as cited in Borgman, 1999, p. 236) who considered digital libraries as "organizations" which provided "resources" and various services—paralleling traditional libraries—surrounding "collections of digital works" that could be used "by a defined community or set of communities." As Borgman stated (p. 236), this conception "captures a

much broader sense of the term 'library,'" but required there to be an institution offering services alongside the collection of digital content placed on the Internet.

Borgman (1999) believed much of the divide between and within the research and practice communities came from the wide variety and stages of work being done on digital libraries, in multiple disciplines and from multiple perspectives. Such digital library research and practice, from about 1995 to 2005, varied from theory- and model-building, to module development, to prototype construction, to entire system implementations, to studies of digital library use. Borgman found definitions had expanded beyond "enabling technologies" to include the contexts of digital library use—"social, behavioral and economic"—within the full cycle of information behavior and information resources (p. 240), paralleling similar changes in the library and information science (LIS) field as a whole and in information behavior research (see e.g. Case, 2012; Courtright, 2008; Raber, 2003).

Digital library textbooks have pulled from both sides of the divide, but often retain bias towards content- and technology-centric conceptions. For example, Arms (2000) defined digital libraries as "a managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network" (p. 2). This includes content- and service-based elements, but emphasizes the collection and the technology used to store, access, and organize it, as shown by Arms's claim that "data … when organized systematically, becomes a digital library collection" (p. 2). Lesk (2005), writing five years later, employed a similar definition: "a collection of information which is both digitized and organized" (p. 2). While showing similar bias to Arms, Lesk listed content, access, and services as key elements of a digital library and discussed the "social effects" (p. 2) digital libraries can have on their users, user communities, and cultures. Despite this, both authors' textbooks emphasized content, organization, and access over services, community, and culture.

2.1.3. Present-Day

While many of the tensions and divides between researchers, practitioners, and disciplines are still present, most in the digital library field have adopted broad definitions, including the ideas of both collections of content and services to users. The ACM/IEEE Joint Conference on Digital Libraries (JCDL), to give a notable example, "encompasses the many meanings of the term 'digital libraries'" from information retrieval system and digital content collection to digital library institutions and digital content in social, cognitive, and organizational

contexts ("About JCDL," 2012), including each of the camps Borgman identified. This broad-based and flexible approach is seen in Bearman's (2007) recent review of the field.

Bearman (2007) was not without views of what digital libraries are, how they should be conceived, and which contexts and aspects are most important. He maintained digital libraries are "not mere technical constructs" (p. 251), not simply information retrieval systems or databases; instead, they are inherently social organizations and environments, socially constructed (Talja et al., 2005; Tuominen & Savolainen, 1997) by users, communities, organizations, and other key stakeholders. His view required the inclusion of each of the camps Borgman identified: content collected for a community and services provided to the community by an organization or institution, with a focus on the social contexts and aspects of digital libraries. Such a consideration was far from new, as will be returned to in section 2.4. First, consideration of the two concepts of communities and collaboration is necessary, as important context for social digital libraries.

2.2. Communities

The concept of community is important in many different fields, but it is not one with a universal definition across or within disciplines. Sociology, concerned with human society and the communities they form, is often the source for conceptions of community adopted in LIS and cognate fields. Sociology featured 94 different definitions of community by the 1950s (Hillery, 1955); a common thread in all of these definitions was people, the human society sociology takes as its main interest. A majority of the definitions included elements of social interaction (97%), tie(s) between individuals (78% with both of these), and an "area" (73% with all three) (p. 118). Hillery concluded a core definition of community would include social interaction between individuals, within an area, with common ties.

Total agreement on these core areas is impossible to reach, even within the field of sociology. The 1970s were a period of tension for defining community; while common elements were similar to Hillery's (see Jones, 1995, p. 21), there were tensions emerging underneath. The "ecological" approach popular in the first half of the 20th century, theorizing interpersonal ties, social structures, and social norms were weakened due to anomie caused by large aggregations into communities, had been called "into great doubt" (Fischer, 1975, p. 1321). Great numbers of personal ties and smaller groups were being found in large urban communities, leading to a "nonecological" approach to communities becoming prevalent (see also Wellman, 1982, 1999).

14

Fischer (1975, p. 1321) presented an influential counterargument to these two approaches, feeling they had "a serious flaw" in either assuming the presence of anomie or ignoring ecological factors in communities. He proposed a "subcultural theory" of urbanism (p. 1323)—one which can be extended to all types of communities—drawing from both ecological and nonecological approaches. His theory concluded larger communities, such as cities, are composed of numerous smaller subcultural communities, each with somewhat different norms, social structures, and ties.

Others, influenced by Fischer's theory, took a similar approach. Wellman (1982) argued for an emphasis on the "structures of communities" and "the larger institutional contexts in which ... [community] networks were embedded" (p. 63). Wellman echoed Fischer in noting "community ties are not bound up in solidary clusters" and multiple community ties give "members ramifying, indirect connections to other social circles" (p. 79). Besides a subcultural, multi-level, and social network approach to studying community, Wellman argued for studying the context of ties, given "ties link persons and not specific strands" (p. 79).

The following overview of community conceptions focuses on concepts having seen recent use in the LIS field or fields cognate to it. It draws on Ellis, Oldridge, and Vaconcelos's (2004) review article but adds additional concepts found in the literature on information behavior, digital libraries, and knowledge management (KM).

2.2.1. Communities of Practice

Communities of practice (often abbreviated as CoPs) originated in the early 1990s out of Lave and Wenger's studies of situated, organizational learning (Brown & Duguid, 1991; Cox, 2005), first published in 1991 (Lave & Wenger, 1991). CoPs are groups of people who share a practice—a broad activity all in the group are engaged in, often a profession—and who are learning this practice through situated, social learning and interaction (Brown & Duguid, 1991; Wenger, 1998). Emphasis on the situated learning element was strongest in Lave and Wenger's (1991) initial formulation, where they focused on the process of legitimate peripheral participation (LPP) and on the reproduction of communities through it: newcomers to a community become acclimated and learn the practice from experienced members, similar to apprenticeship. Later perspectives and uses of CoPs (Brown & Duguid, 1998, 2001, 2002; Wenger, 1998, 2006; Wenger, McDermott, & Snyder, 2002) have been more ambiguous and less grounded in theory, focusing on the role such communities can play in knowledge management,

15

sharing, and transfer within the broader organizations they are part of. These later views share affinity with Fischer's (1975) subcultural theory and include at least two of the three characteristics discussed by Hillery (1955).

Many are critical of CoPs, arguing their true theoretical core has become lost in translation and ambiguity (Cox, 2005; Handley, Sturdy, Fincham, & Clark, 2006; Hughes, 2007; Murillo, 2011; Storberg-Walker, 2008), they lack a strong consideration of power issues (S. Fox, 2000; J. Roberts, 2006), and face difficulty in balancing emergent vs. managed communities (Chanal & Kimble, 2010; J. Roberts, 2006). Key originators of the CoP concept have criticized the shifts in its use over time (Duguid, 2005, 2008; Lave, 2008). The biggest shift, from an initial theoretical basis as an emergent phenomenon of situated learning to a prescriptive and pragmatic approach believing communities can be created and managed for the purpose of knowledge sharing, is a key limitation of CoPs. Most views of CoPs are limited in their definition of engagement and by focusing on practice.

Brown and Duguid's (1998, 2001, 2002) revised version of CoPs has the most potential benefits for studying social digital libraries: it eliminates the strong limitations in learning, apprenticeship, LPP, or reproduction earlier versions have; includes a multi-level view with the introduction of networks of practice; grounds CoPs in KM concepts; and incorporates relevant research on common ground (cf. Bechky, 2003; Davenport & Prusak, 2000, p. 98; Olson & Olson, 2000, pp. 157–161; Wasko & Faraj, 2000), boundary spanners (cf. Brown & Duguid, 1998; Leonard-Barton, 1995; Levina & Vaast, 2005), and boundary objects (see section 2.7 below). Unfortunately, it relies on limited research and observation, is vague on the topic of engagement, (like all versions) struggles with the debate between emergent and designed / managed CoPs, and is not well-grounded in theory.

2.2.2. Virtual Communities

The concept of *virtual communities* is used in many disciplines, with researchers using different definitions but maintaining common characteristics (Ellis et al., 2004; Preece & Maloney-Krichmar, 2003). Rheingold (1993, republished in 2000) was an early user of the term, defining virtual communities as "computer-mediated social groups" (p. xv) and as "social aggregations that emerge from the [Internet] when enough people carry on … public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (p. xx). Such a definition features social interaction between individuals who form

social ties, two of the three areas suggested as core to sociological definitions of community by Hillery (1955), and implies such communities are emergent social constructions (cf. Tuominen & Savolainen, 1997). Geographical boundaries were not a part of Rheingold's (2000) conception. His conception falls within the subcultural view proposed by Fischer (1975): "there is no such thing as a single, monolithic, online subculture … it's more like an ecosystem of subcultures" (Rheingold, 2000, p. xviii). Although Rheingold's book focuses on the virtual community known as the WELL (Whole Earth 'Lectronic Link), he stressed the different subcommunities present within—and often across—its boundaries, a view in clear agreement with Fischer (1975) and Wellman (1982).

Virtual communities have, of course, shifted since 1993. Ellis et al. (2004) discussed the concept's relations with other community concepts, indicating the "growing up" of virtual communities as a concept and as a social phenomenon. Kraut, Wang, Butler, Joyce, and Burke (2008) defined online communities as "large, persistent collections of individuals with common or complementary interests whose primary method of communication is over the Internet" (p. 1); social interaction and social ties were included, but again a geographical area was not. Common replacements for the latter as motivation and support for the community to organize—and as potential limits to the concept's applicability—include a "shared goal, interest, need, or activity"; "repeated [and] active participation"; "strong emotional ties"; "access to shared resources"; "reciprocity of information, support, and services"; and "shared context" in the form of "conventions, language, [and] protocols" (Whittaker, Isaacs, & O'Day, 1997, p. 29). Haythornthwaite's (2007) focus on social interactions and ties between members fell closer to prior sociological definitions of community, discarding most of Whittaker et al.'s (1997) additional characteristics. Others associated with LIS, sociology, science and technology studies (STS), and computer-supported cooperative work (CSCW) have stressed the boundaries of virtual communities and how they are crossed (or not) as an important factor (Burnett et al., 2001; Star et al., 2003). Burnett, Dickey, Kazmer, and Chudoba (2003) considered virtual communities as "consistent with the concept of a community of practice" (Virtual Community section, para. 3), but virtual communities breach most of the limitations of the latter discussed above.

2.2.3. Arenas

The concept of *arenas* was developed by Strauss, Schatzman, Bucher, Ehrlich, and Sabshin (1964), who found existing models of hospitals to be lacking for explaining "psychiatric philosophies and … associated daily practice" (p. 3). They developed arenas to examine the "social organization" and "social process[es]" around psychiatric philosophies (p. 14), focusing on levels of agreements and negotiations, including of norms, rules, and values often taken for granted. External and internal interactions and negotiations between smaller subgroups of the organization were included. Strauss et al. argued the arena concept could be extended beyond hospitals to looser and more informal "organizations" such as professions, hobbyists, and enthusiasts. Arenas parallel later work on CoPs (Ellis et al., 2004) and foreshadow later work in organizational science, STS, and KM, albeit each of these placing different spins on similar broad ideas. From a sociological perspective, arenas provide an approach to communities similar to Fischer's (1975) subcultural theory; using the arena concept, one could apply multiple levels of analysis in examining an organization, its subunits, and any superordinate units. It includes all three of Hillery's (1955) core criteria: social interaction, ties between individuals (via the organization), and a form of area (the arena), although not always a geographic one. Arenas include contextual factors of interest—agreements, norms, rules, commitments, and interactions—which are similar to the processes of key interest in CoPs or the concepts within the theory of information worlds (discussed in sections 2.2.6 and 2.8.2). Arenas have broad application, but their focus on organizations, agreements, and commitments limits their flexibility.

2.2.4. Social Worlds

Strauss's (1978) later concept of *social worlds* is more flexible than his earlier development of arenas. Strauss built on the work of Shibutani (1955); each studied sociology at the Chicago School with Blumer (see Becker, 1999, p. 8; Clarke & Star, 2008; Wacker, 1995, p. 146). Shibutani examined the concept of "reference groups" and argued it should be restricted to the perspective of a group from which the actor sees him/herself as acting, constituting the actor's frame of reference. He stated these groups "arise through the internalization of norms … [and] constitute the structure of expectations" belonging to a group which an actor chooses to relate to, but may not belong to (p. 565). An "amazing variety" of these norms and beliefs led to a similar "variety of social worlds," each with its own "organized outlook" based on the

interaction and communication of a given group of people (p. 566). Their boundaries were based on communication, not "territory" or "formal group membership" (p. 566). Shibutani never clarified the relationship between the reference group and social world concepts, appearing to equate them in places while maintaining vague differences elsewhere.

Strauss (1978) proposed "a social world perspective" (p. 121), moving beyond his focus on organizations as arenas and Shibutani's on communication. Strauss argued social worlds consist of social organizations, processes, communication, "activities, memberships, sites, [and] technologies" in relation to social change (p. 121). He further stressed the differences in size, spatial ties, visibility, privacy, abstractness, permeability, and structure of social worlds. A Straussian social world was theorized to include (a) "at least one primary activity … strikingly evident"; (b) "sites where activities occur"; (c) "technology … [for] carrying out the social world's activities"; and—in established social worlds—(d) "organizations … to further one aspect or another of the world's activities" (p. 122). Strauss believed social worlds would "intersect … under [various] conditions" (p. 122), and could segment into smaller subworlds given sufficient analysis.

Strauss's social world perspective relates to other conceptions of community, including his earlier concept of arenas (Strauss et al., 1964), now defined as organizations where representatives of subworlds would negotiate conflicts and issues between them, impacting on the broader social world (Strauss, 1978). Arenas focused on the negotiation and agreement aspects of organization and social practice. Given the similarities to CoPs, one could consider substituting the latter for arenas in the social world perspective, but CoPs have a more restricted perspective; social worlds are not restricted to practice, online environments, or organizational negotiation. There are still a few limitations provided by the framing concepts of activities, sites, technologies, and—in established cases—organizations, but Strauss intended for broad and flexible interpretation of these. Unlike Lave and Wenger's learning-focused practice, Strauss's activities could be almost anything that could be labeled as such. The social worlds perspective falls within the social constructionist (Talja et al., 2005; Weinberg, 2009) and social constructivist (Clarke & Star, 2008) perspectives, given its focus on "universes of discourse" (as termed by Mead; see Clarke & Star, 2008, p. 115).

19

2.2.5. Social Networks

Social network analysis and the *social network perspective* have been used to describe and study communities of all kinds; they are most often used when patterns of interaction, information exchange, and knowledge transfer are of interest. Part of the goal of the social network approach is to "tease out the prominent patterns" and "trace the flow of information (and other resources) through" the ties and relations of people and organizations (Garton, Haythornthwaite, & Wellman, 1997, The Social Network Approach section, para. 3). Freeman (2004, p. 2) termed it a "structural approach … based on the study of interaction among social actors." Many researchers study what effect relations between people, organizations, and the associated networks have on the behavior and activities of these individuals and groups (Garton et al., 1997). Wellman (1999, p. 15) has argued a network view of community reflects that "the paramount concerns of sociologists are social structures and social processes—and not spatial groupings." Communities under this perspective can overlap and interact, given people at the far ends of a network will not be aware of each other (see also Milgram, 1967) and should be considered members of different communities. As discussed above, Wellman's thinking fits with Fischer's (1975) subcultural theory, and many social network analysts share this view. The focus on social ties represents one of Hillery's (1955) three core criteria for conceptions of community, and social interaction is implicit—a social network without interaction is a set of isolated nodes—but social network analysis does not require a bounded "area." Conceptualizing communities as social networks falls close in line with other sociological concepts, remaining compatible with the concepts of CoPs, virtual communities, arenas, and social worlds. It has one major limitation, requiring community to be viewed through the "social network" lens; this is still less constraining to many than a basis in situated learning and practice, a required common goal, or a focus on negotiation and norms.

2.2.6. Information Worlds

While its origination differs, a related concept to social worlds is *information worlds*, developed as a theory by Burnett and Jaeger (2008; Jaeger & Burnett, 2010) and discussed at length in section 2.8.2 below. As a conception of community, it includes social interaction, ties between individuals, and a bounded—albeit non-physical—area, the information world. While it includes all three of Hillery's (1955) core elements, it treats each one in line with the subcultural theory proposed by Fischer (1975). The normative behavior in and mutual influence between

20

information worlds (see section 2.8.2 below) are indicative of how such worlds are socially constructed (cf. Talja et al., 2005; Tuominen & Savolainen, 1997).

Due to Burnett and Jaeger drawing on Chatman's (1991, 1992, 1996, 2000) small worlds and Habermas's lifeworlds, the concept and theory of information worlds are compatible with Strauss's (1978) conceptions of arenas and social worlds at multiple levels and scales of analysis. The theory's focus on information behavior echoes Shibutani's (1955) earlier focus on communication, albeit Burnett and Jaeger's work has stronger grounding in previous theoretical and practical work in LIS. This grounding is stronger and firmer than that of CoPs in KM, given the latter did not start out as a KM theory (as seen in Lave & Wenger, 1991; see also the discussion by Cox, 2005). Virtual communities can be considered "public information worlds rooted in group-based social interaction … [and] almost textbook examples of small information worlds," as discussed by Jaeger and Burnett (2010, p. 93); a social network perspective to studying one or more information worlds would be compatible (albeit not required). The theory and concept are compatible with and can incorporate many of the other concepts reviewed above.

The main weaknesses of information worlds are its foci on norms, types, values, information, and information behavior; the theory and concept have less direct applicability in studies where knowledge, learning, or other phenomena are of greater interest. Their strength for LIS studies and studies of digital library communities are in their flexibility and compatibility with other conceptions, theories, and perspectives, while focusing on specific analysis of norms, types, values, behaviors, and boundaries. Combined with other theories and concepts, information worlds can serve as part of a strong theoretical framework for social digital libraries, discussed later in this chapter.

2.3. Collaboration

Collaboration is another concept important to social digital libraries, one "as common and natural a form of information behavior as individual seeking" (Talja, 2002, p. 9). Although kinds of and contexts for collaboration are well-defined—e.g. scientific collaboration (Sonnenwald, 2007)—it is rare for the root concept to be specified in great detail and "there is no widely accepted definition of collaboration" (Hansen & Järvelin, 2005, p. 1102). Nevertheless, there is significant literature discussing the concept of collaboration in multiple research circles.

The literature most germane to collaboration in and around digital libraries is from information seeking and retrieval, computer-supported cooperative work (CSCW), and scientific collaboration research. Hansen and Järvelin (2005) provided a useful review of collaboration in the first two of these areas, noting "the importance of personal contacts and discussions" (pp. 1102-1103), the key role of "gatekeepers in organizations" (p. 1103; cf. Brown & Duguid, 1998; Leonard-Barton, 1995; Levina & Vaast, 2005), and research on the communication patterns and networks in an organization. Research had found information sharing takes place in multiple ways (including formal and informal), using multiple source types, and at multiple levels (Hansen & Järvelin, 2005). Talja's (2002) in-depth study found sharing and collaboration could be (a) strategic, consciously "maximizing efficiency"; (b) paradigmatic, establishing a new research area, field, or practice; (c) directive, "between teachers and students"; or (d) social, building relationships and communities without a strict goal or task (p. 4); sharing could also be nonexistent. Social interaction is more important in sharing "interpreted information" than factual information (Hansen & Järvelin, 2005, p. 1104), similar to findings on the difficulty in sharing tacit knowledge (Nonaka, 1994). Hansen and Järvelin's (2005) review of CSCW studies found cooperation and collaboration fell on a set of continua: asynchronous vs. synchronous activities, traditional communication vs. CMC; loosely vs. tightly coupled activities; and different degrees of awareness of information and information sources. This view provides a large amount of flexibility, but without detailing what occurs during collaboration beyond sharing information. An extensive review of CSCW by Mills (2010) included human-to-human communication, coordination of common activities, access to information (topical and to support the collaboration), and support for interactions—and the resulting collaboration—across space and time under a view of collaboration.

Sonnenwald's (2007) definition of scientific collaboration, presented in the context of a thorough literature review, is similar to the CSCW-based definition given by Mills (2010): "interaction taking place within a social context among two or more scientists," with this interaction facilitating "the sharing of meaning and completion of tasks," tasks part of "a mutually shared, superordinate goal" (Sonnenwald, 2007, p. 645). Hansen and Järvelin's (2005) "broad and preliminary definition" for collaboration (p. 1102)—synthesized from the information retrieval, information seeking, and CSCW literature—was similar; they required information access, a specific problem or task at hand, and human beings as direct or indirect

information sources. They stressed flexibility in the information seeking environment and the specifics of the source. This definition, much like Mills's (2010), is still restricted to collaboration taking place around a specific problem or task. Sonnenwald's (2007) definition—if "scientists" are replaced by "people"—lacks the information access requirement of Hansen and Järvelin (2005) but is otherwise compatible.

All four authors appear to consider serendipitous information sharing—e.g. happening to come across a research article on a topic which a colleague is researching, choosing to send the link to them—to be "less" than collaboration. Serendipity is common as individual information behavior (see Case, 2012, p. 101; Erdelez, 2005; Foster & Ford, 2003) and "an integral part of the creative process" across fields (p. 321); it is accounted for in Talja's (2002) social information sharing category. There is no obvious reason why it would not occur or should be ignored in the context of collaborative information behavior, if a broad view of the latter is adopted.

Talja's (2002) separation of serendipity into a separate category implies collaboration may differ by type, level, or degree, an idea present in Gunawardena, Weber, and Agosto's (2010) classification of coordination, cooperation, and collaboration as separate activities. Drawing on Maienschein and Mattesich's work, they argued groups who do not choose their goal are engaged not in collaboration but in cooperation. All three concepts included information exchange, activities of mutual benefit, and a common purpose; coordination did not include sharing of resources, and only collaboration included "enhancing the capacity of another" (Gunawardena et al., 2010, p. 212). When moving from cooperation to collaboration, relationships became more integrated; risk increased; new structures were created; commitment to common goals increased; planning was more comprehensive; and resources, responsibilities, and authority were shared and pooled more often. Gunawardena et al. stated such distinctions were not often made in studies, leading to different definitions in different contexts. In trying to build such a consensus, they adapted other definitions and defined collaboration as "human behavior that makes a substantial contribution toward the advancement of a research project … with respect to a mutually shared superordinate research goal and which takes place in a research setting" (Gunawardena et al., 2010, pp. 213–214). This definition again requires a common goal, task, or activity to be completed through collaboration; while focused on the research setting, it provides a useful summary of the broad consensus of Hansen, Järvelin, Mills, and Sonnenwald.

There is still disagreement on if common access to information sources is required and if serendipity is true collaboration or a form of coordination.

2.4. Social Digital Libraries

2.4.1. The Social Paradigm

Having explored communities and collaboration as important social phenomena, a discussion of considering digital libraries in social context—a third view alongside the two conceptions Borgman (1999) found—can now take place. While Smith (1981, 1991) discussed critiques of Bush's (1945) introduction of memex as focusing too much on the technical and engineering challenges of the information problem and not enough on the human side, Bush (1945) was an early believer in the social paradigm, as it might be called today (cf. Raber, 2003, pp. 201–223). He did not consider the scholar's memex to be a single-user system, used by one individual for simple storage and retrieval of information (although it was capable of this). Instead, he intended the information stored in a memex to be socially exchanged, constructed, and discussed by and with other scholars and scientists within and beyond the scholar's social network.

The social paradigm sees information as a broad phenomenon having "social significance" (N. Roberts, 1976, p. 249) which "must be examined in the context of its social nature" (Raber, 2003, p. 222). Information is subjective within this context, differing in meaning and interpretation between different individuals, groups, communities, organizations, cultures, or societies (Jaeger & Burnett, 2010; Talja et al., 2005). Data, information and knowledge may be within information systems, outside these systems, in the heads of users, or be socially constructed by groups and communities (Tuominen & Savolainen, 1997). Research examines the "production of knowledge" (Karamuftuoglu, 1998, p. 1071), where "information acquiring and processing capabilities are not individual but social manifestations" (Brookes, 1975, as cited in N. Roberts, 1976, p. 254). Users are active participants in the social construction and production of information and knowledge and may take on multiple roles in the resulting discourse (Talja et al., 2005). Early calls for a social paradigm (N. Roberts, 1976; Rosenberg, 1974; T. D. Wilson, 1981), combined with the recent research and advocacy of Chatman (2000), Kling (1999; see also Horton, Davenport, & Wood-Harper, 2005), Savolainen (1995; Tuominen & Savolainen, 1997), Sawyer (Sawyer & Eschenfelder, 2002; Sawyer & Tapia, 2007), and others have led to

broad—but by no means exclusive—adoption of the social paradigm among information science researchers.

Despite this expressed need—as far back as 1945—for social contexts to be considered under a social paradigm, many early information retrieval systems focused on the technology, as is evident in portions of Smith's (1981, 1991) analysis and in Raber's (2003) discussion of the key problems of information science. Echoes of paradigmatic unrest are seen in the divisions on how digital libraries should be seen (see above and Borgman, 1999) and Brown and Duguid's (2002) rejection of technology-centric solutions to information and knowledge problems.

2.4.2. Calls for Social Digital Libraries

Nevertheless, many have repeated and restated the call for consideration of digital libraries-as-information-systems in social context. As early as the first academic conference on digital libraries, Ackerman (1994, p. 198) argued it is "unwise … [and] unnecessary … [for] social exchange and interaction" to be ignored by digital libraries. Levy and Marshall stated digital libraries should be considered social as early as 1995, feeling conceptualizing their use as solely individual—in alignment with early information seeking research (see Case, 2012; Ellis, 1992; Raber, 2003)—was a mistake (Levy & Marshall, 1995). Digital libraries, they believed, should instead be modeled after traditional libraries, serving as "meeting places where joint research is carried out" in "a highly collaborative" way, supporting their user communities, and facilitating the communication and collaboration taking place between users (p. 80).

Neuhold, Neiderée, and Stewart (2003, p. 1) stated digital libraries must support "community efforts to capture, structure, and share knowledge," an approach similar to that taken by KM and CoPs but compatible with the views of Bearman, Levy, Marshall, and others. Marchionini, Plaisant, and Komlodi (2003, p. 121) believed digital libraries "are embedded in many different communities … [and] contexts" which are "inescapable," a view stressing these contexts and communities must be considered throughout the lifecycle and study of a digital library. Van House (2003, p. 272) argued digital libraries must support collaboration: "cognitive or knowledge work" that is "situated, distributed, and social." Her thinking has strong echoes of Levy and Marshall and the placing of digital libraries—and the information behavior of their users—within a situated social context.

Marshall wrote a further paper on sharing encountered information via digital libraries with Bly (Marshall & Bly, 2004), wherein they concluded digital libraries must allow for the

finding and sharing of information that strengthens communities and social ties, placing emphasis on supporting tie-strengthening collaborations. Frumkin (2004) argued digital libraries are "content, provided through digital services" (p. 155), but had to provide traditional "value-added information experience[s]" desired by patrons and users, be they technical, individual, or social (p. 156). Lynch (2005, para. 21), in looking at the future of digital libraries after their first ten years of funded research, maintained they must be "connect[ed] and integrat[ed] … with broader individual, group, and societal activities" and must support collaboration in these contexts. Gazan (2008, Introduction section, para. 2) argued content in digital libraries is a natural part of "an ongoing conversation among a community" and digital libraries should not ignore this conversation; ignoring the contexts, community, and collaboration would be a grave mistake.

These calls relate to all of the conceptions of community discussed above: Fischer's subcultural theory (all, but especially Neuhold et al., 2003), communities of practice (Gazan, 2008; Levy & Marshall, 1995; Marchionini et al., 2003; Van House, 2003), virtual communities (Ackerman, 1994; Gazan, 2008), arenas and social worlds (Levy & Marshall, 1995; Lynch, 2005; Neuhold et al., 2003; Van House, 2003), social network analysis (Marshall & Bly, 2004), and information worlds (Lynch, 2005; Neuhold et al., 2003). Most authors fall under the consensus view of collaboration summarized by Gunawardena et al. (2010), with Marshall and Bly (2004) and Lynch (2005) allowing the most for flexibility and serendipity. Of these calls, many show a belief that digital libraries, the information they contain, and the communities that use them are socially constructed; Levy and Marshall (1995), Neuhold et al. (2003), Van House (2003), Lynch (2005), and Gazan (2008) make the strongest arguments for such a view.

2.4.3. Defining a Social Digital Library

A social digital library, then, is of clear importance as a goal for all digital libraries. Adapting Borgman's (1999) definitions, it can be defined as (a) having one or more collections of digital content collected on behalf of a user community; and (b) offering services, relating to the content, by or through the digital library to the user community. It is, or is part of, one or more formal or informal organizations that manage these content and services, focusing on facilitating information and knowledge creation and sharing (after Lankes, 2009, 2011) and excluding different primary motivations (e.g. selling products). These characteristics should be

considered in light of the various contexts they inhabit, most of all the social contexts; the social digital library is socially constructed (cf. Tuominen & Savolainen, 1997).

This definition and conception of a social digital library parallels the roles of physical libraries (Pomerantz & Marchionini, 2007, p. 506), which are not just physical collections and technical services but physical and conceptual spaces "link[ing] people to ideas and to each other." It further parallels the definition found in the DELOS Reference Model and associated Digital Library Manifesto (see Candela et al., 2007, sec. 2, para. 3), which included (a) an organization; (b) the collection and management of digital content; and (c) functionality and services associated with the content. The DELOS definition includes additional elements of quality, policy, and preservation; these are important parts of many, but not all digital libraries, and are not made explicit in the definition considered here (but would fall under services).

Collaboration and community are major factors in this definition. A user community may consist of smaller communities or groups, adopting the subcultural view pioneered by Fischer (1975) and incorporating flexible use of one or more of the conceptions discussed above and used in calls for social digital libraries. The content collected by the digital library is intended to be used by these communities; the services it offers are for the communities; and the organization(s) it is associated with are a form of community. A major objective of digital libraries is to support and help construct these differing kinds of "knowledge communities" that use their content and services (Bearman, 2007, p. 245). Digital libraries can and should improve and build these communities by supporting their "internal workings … and their links to the rest of the world" (Agre, 2003, p. 227), becoming tightly bound to these communities (Star et al., 2003). Supporting these workings and links requires supporting social contexts: collaboration within and across communities, the building and construction of new and existing communities, and individual and collaborative information behavior. Such collaboration centers around a common overall project, goal, interest, or practice (Gunawardena et al., 2010), although serendipitous opportunities for collaboration within and between communities should not be dismissed, given the commonality and value of serendipity as information seeking behavior (see Case, 2012, p. 101; Erdelez, 2005; Foster & Ford, 2003; Talja, 2002) and its importance "for its role in connection building, discovery and creativity" (Foster & Ford, 2003, p. 323) by and between individuals and groups (see also Marshall & Bly, 2004).

<center>**2.5. Previous Social Digital Library Research**</center>

Once the *why* question has been answered, the next big question is, of course, *how* can we support the social contexts in and around digital libraries? Many approaches, perspectives, models, and theories have been applied to studying and supporting the communities served by digital libraries and the collaborations their members engage in, with varying and mixed degrees of success. These can be placed into two groups: earlier, experimental efforts; and perspectives with more long-term success and promise.

2.5.1. Experimental

Many experimental models and perspectives proposed by researchers showed great promise at first, but have not been as successful in practice over time. Despite this, these projects and models can help better inform the conceptualization, design, and development of social digital libraries and their support for collaboration and community-building behaviors.

2.5.1.1. Sharium. Marchionini's (1999, p. 1) *sharium* model for digital libraries stressed collaboration and sharing within communities and networks "to facilitate communication and distribute the load of solving information problems." Proposed features included (a) experts sharing knowledge and time in digital reference, question-answering, and recommendation services; (b) easy contribution and sharing of digital content by the community; and (c) better support of collaborative, self-directed learning. Marchionini applied the model within three digital library projects, but none were unqualified successes: the American Front Porch (AFP) project (Sonnenwald et al., 1999) was too ambitious and never implemented many collaboration services; the Baltimore Learning Community (BLC) (Marchionini et al., 2003) faced low adoption of social features and technical difficulties by its user base of middle-school teachers; and the Open Video Digital Library (OVDL; Marchionini, Wildemuth, & Geisler, 2006) had many of its sharium features stripped, e.g. videos to be added were accepted only as part of already existing university or government collection, not from end-users of the digital library. While the OVDL is still in existence, its current support for collaboration and interaction appears minimal at best, and no contributions are being accepted (Open Video Project, n.d.). The sharium model provided an excellent theoretical view of a social digital library—at least at first glance— but not one achieved in practice. Too strong a focus on its ideals and on the technology required to support them (cf. Brown & Duguid, 2002), at the expense of the theory and concepts behind

<center>28</center>

community—Marchionini (1999) included no citations of any major conceptions or theories of such—appear to have been major contributions to its low level of success.

2.5.1.2. CKESS. The CKESS model and project proposed by Bieber et al. (2002) drew on research into knowledge management, CoPs, and virtual communities. To say it was ambitious would be an understatement; it included communication, concept and process mapping, hypermedia, and decision analysis support among its many planned features. This ambition, combined with a high degree of specificity and a lack of realistic consideration of context—expert knowledge of a modeling language and semantic concept maps was expected of users—restricted its ability to be adopted by other projects and stunted its own progress beyond Beiber et al.'s thought exercise. Its publication in a management information systems (MIS) journal and not a common source of digital library literature may have contributed (K. Burnett, personal communication, September 16, 2009). CKESS's lack of success may not have been the fault of the conceptions of community and collaboration applied, but greater consideration of their context was necessary. Bieber et al. may not have understood the limitations of the conceptions they drew on, or felt such limitations could be worked around through sheer ambition and use of technology.

2.5.1.3. CYCLADES. Unlike CKESS, the CYCLADES project (Candela & Straccia, 2003; Renda & Straccia, 2005) did make it to the prototype stage in its development of a folder-sharing, community-based digital library for supporting collaboration. Collaboration was supported via folder-sharing features and "discussion forums and mutual awareness" (Candela & Straccia, 2003, p. 159). Their conception of community was as "a set of users sharing a common (scientific, professional) background or view of the world" (Renda & Straccia, 2005, p. 9), perhaps most akin to social worlds but also compatible with CoPs and information worlds. The prototype is no longer online nor is a final system; its defunct web site (CYCLADES, n.d.) implies it ran out of funding and could not secure more. As with CKESS the conceptions used may not have been to blame, but greater understanding of them and less emphasis on technology may have led to greater success.

2.5.1.4. Alexander. The Alexander project undertaken by Kolbitsch, Maurer, and their colleagues (Kolbitsch & Maurer, 2006a, 2006b; Kolbitsch, Safran, & Maurer, 2007) aimed to build "a community around an encyclopaedic body of knowledge" (Kolbitsch & Maurer, 2006b, p. 185) combined "with contemporary news articles" (Kolbitsch, Safran, & Maurer, 2007,

Prototype Implementation section, para. 1). As shown by Kolbitsch and Maurer's (2006a) review, they were aware of multiple conceptions of communities, but focused on virtual communities—emphasizing blogs and wikis—and social networks. Alexander's proposed feature set was almost as ambitious as CKESS's. A small subset of these made it into a prototype, which—as with CYCLADES—is no longer online and the project concluded in 2007 (Institute for Information Systems and Computer Media, n.d.) without any further publications as planned per Kolbitsch, Safran, and Maurer (2007). Ambition, a lack of funding, and a narrow tunnel-like focus on technology appear to have doomed Alexander.

  2.5.1.5. 5S. Fox first proposed his 5S model for digital libraries in 1999 (Fox, 1999). The five S's are *streams*, *structures*, *spaces*, *scenarios*, and *societies*, corresponding to content, organization, retrieval and interface, services, and community (Fox & Urs, 2002, p. 519; Fox & Gonçalves, 2009). Early use of the 5S model applied it to existing digital libraries, as seen in Fox (1999). The societies component, of most interest here, took the form of an informal analysis of stakeholder communities and their role within and around the digital libraries in question. Gonçalves, Fox, Watson, and Kipp (2004) formalized the model in mathematical, set-theoretic terms, defining a society as "a set of entities"—human and technical—"and the relationships between them" (p. 275). Unfortunately, they abstracted communities away from "social communities" and towards "digital communities … instantiated by the adoption of a particular architecture and interface" (p. 279). Although Gonçalves et al. included content, services, and communities in their conception of a digital library, they were focused on technical and information retrieval contexts. Recent work has continued this focus while developing a framework for evaluating the quality of a digital library (see e.g. Moreira, Gonçalves, Laender, & Fox, 2009). 5S as it stands is inappropriate for modeling social, community-based digital libraries under the conceptions of community reviewed above. Bearman's (2007) review places 5S within a section on technology, and not under services or social impacts; he considers societies to be representative of "clients" and not communities (p. 236). If a more appropriate conception of community was substituted for that of Fox, Gonçalves, and their colleagues, the 5S model could have potential for research on and practice in social, community-based digital libraries. Substantial further work would be necessary to test this potential applicability.

  Brief mention should be made of a related framework for digital libraries that may have more potential, proposed by Fox and other colleagues at Virginia Tech and elsewhere. Akbar et

al. (2011) have labeled this "DL 2.0"; it is based on testing of the Ensemble educational digital library portal, a National Science Digital Library (NSDL) project (see also Brusilovsky et al., 2010). This framework consists of resources, services, and users, with the model supporting services that provide relations between resources and other resources (tags, links, ratings), resources and users (ownership / authorship, reading / downloading, contribution of comments or ratings), and users and other users (membership, contact / tie formation, co-authorship). The framework is couched in language that could—if elaborated on, developed further, and tested in one or more digital libraries—lead to successful social digital libraries; at this point, limited to the single article of Akbar et al. (2011), full assessment of its promise is not possible.

2.5.2. Successful, Promising

Other approaches have been more successful and/or have appeared quite promising, including in contexts outside the usual scope of digital libraries.

2.5.2.1. Wikis. Wikis seem a natural fit for supporting collaboration around digital libraries, given their nature as social and collaborative constructions. They have been discussed in the context of communities formed around bodies of knowledge (Kolbitsch & Maurer, 2006a, 2006b), collaborative learning within these (e.g. Chu, 2008), and how these communities organize themselves and their practices (e.g. Stvilia, Twidale, Smith, & Gasser, 2008), but there is little known literature directly applying wikis to the design and development of digital libraries. Krowne (2003) is an exception, developing a successful digital library called PlanetMath (planetmath.org) using a wiki-like approach he called "commons-based peer production" (Introduction section, para. 1). This approach defines the community as having the goal of creating an "intellectual work" (Introduction section, para. 1) and collaborating to do so; this matches Gunawardena et al.'s (2010) summary of the consensus on collaboration, while restricting the concept of community to one with a purpose, most similar to CoPs and some views of virtual communities. Wikis may prove useful for social digital libraries, but further research and application is necessary to see if they are applicable under other conceptions, models, or theories of community.

2.5.2.2. Social annotations. Social annotations—"enrichment[s] of information object[s] with comments and other forms of meta-information" (Neuhold et al., 2003, p. 10) that are shared with the public and can be annotated or "enriched" themselves by other users (p. 11)— have been used with success to support social digital libraries and community-based

collaboration. While related to social tagging, social annotations include other user-contributed additions to digital content, allowing digital library users and user communities to "take a more active part" in socially constructing the digital library and providing "a valuable medium for collaboration" within and beyond these communities (p. 11). Social annotations have been used to a degree of success in the DEBORA (Nichols et al., 2000) and COLLATE (Frommholz et al., 2003) projects, albeit they did not make it past the prototype stage. The Digital Library for Earth Science Education (DLESE; dlese.org) and the Multimedia Educational Resource for Learning and Online Teaching (MERLOT; merlot.org) are more successful examples of social annotations as evaluative metadata in production digital libraries (see also You, 2010), albeit DLESE faced limitations and usability issues (Arko, Ginger, Kastens, & Weatherley, 2006). Brusilovsky et al. (2010) have included social annotations as part of personalization techniques in the Ensemble educational digital library portal, leading to what they called "social navigation," facilitating users' use of Ensemble and adding an element of social construction to its interface (p. 2890). García-Crespo, Gómez-Berbís, Colomo-Palacios, and García-Sánchez (2011) developed a digital library prototype, CallimachusDL, that incorporated social tagging and folksonomies within a semantics-based design. Their proof-of-concept was not explicit in addressing many social phenomena such as communities or collaboration, but tested well in use by final-year undergraduates in computer science. Ensemble and CallimachusDL, while promising, require further testing and may need additional adaptation to prove their potential as applications of social annotations as one element of a social digital library design.

Social annotations have been employed with success in contexts similar to digital libraries. These include Web 2.0 social question-and-answer site AnswerBag (answerbag.com), which faced many of the same community-building challenges digital libraries face (Gazan, 2008); it has been successful, with over a million users in late 2009 (Answerbag, 2009) and more than a million unique visitors in April 2014 per Compete, Inc. (2014). While Pinterest does not share all the characteristics of a social digital library, it uses many of the same type of social annotations (Zarro & Hall, 2012), and might provide some guidance for social digital libraries wishing to incorporate social tagging, linking, and sharing features. Fringe, a prototype of a folksonomic contact manager which expanded social annotations and tagging from documents to people, was studied by Farrell, Lau, and Nusser (2009); they found tagging and folksonomies provided incentive for community-building and concluded further study of this form of social

annotations in this and other contexts would be useful. The Steve project (www.steve.museum) is intended to explore "the role of social tagging" and to study "the resulting folksonomy" around digital art museums (Trant, 2006, p. 1), which have many similarities with digital libraries. Trant's study of a preliminary tagging prototype concluded "social tagging seems a promising way to" improve access (p. 22), and the prototype appeared successful at building community through increasing engagement and motivating contributions (see also Bearman & Trant, 2005). A production version of Steve has been used in experimental studies of image tagging behavior (Landbeck, 2013; Stvilia, Jörgensen, & Wu, 2012). Steve, Pinterest, Fringe, and AnswerBag provide good examples of the potential of social annotations for supporting emergent community and socially constructive collaboration around and within social digital libraries.

  2.5.2.3. Social constructionism. While the ideas inherent in social constructionism are present in the work of others, Tuominen, Talja, and Savolainen (2003) directly applied social constructionism to the concept of social digital libraries, focusing on "discourse" and multiple expressed perspectives (p. 564; see also Talja, Tuominen, & Savolainen, 2005; Tuominen & Savolainen, 1997). This specific approach to social constructionism is most compatible with information worlds; Shibutani's (1955) version of social worlds and/or reference groups is quite similar. Situated learning-centric views of CoPs—but not as much later management-centric conceptions—feature elements of social constructionism. Social constructionism has been applied to a digital library prototype, ScholOnto (pp. 565-567), which now appears moribund (Knowledge Media Institute, 2004) much like CYCLADES and Alexander. The CallimachusDL digital library prototype of García-Crespo et al. (2011), through its incorporation of semantics, could be considered to include social constructionism elements, although this is not claimed by the authors. Alemu, Stevens, and Ross (2012) argued for a social constructivist approach to improve metadata interoperability across digital libraries through social annotations, an approach similar but not identical to social constructionism (see also Talja et al., 2005).

  Social networking sites have focused on the centrality of social discourse to users' information behavior, although each has chosen a different set of features and different elements of social constructionism are present in each. Facebook (facebook.com) and Twitter (twitter.com) are the best-known examples, but Google Wave (wave.google.com) and FriendFeed (friendfeed.com)—neither in current, active development—in many ways took the

idea further. Elements of social constructionism are present in social blogging and pinning services, such as Tumblr (tumblr.com) and Pinterest (pinterest.com; see also Zarro & Hall, 2012). These services share in their overall flexibility, implying flexible and broad conceptions of communities and collaboration would represent them best. Given mixed-to-good levels of success in the Web 2.0 world, it would be useful to see further exploration of how the ideas inherent in social constructionism could—through appropriate theories and conceptual constructs—be applied to digital libraries.

      2.5.2.4. Social network approach. Two measures from social network analysis (discussed above) could be used as measures of community-building and collaboration activity and of a successful social digital library. These are range—the size and heterogeneity of the network—and density—how many relations and ties occur compared to the theoretical maximum number possible. There may be community-building and collaboration activities not caused by the digital library or its content that confound some measures of range and density; these would have to be controlled for. Social network analysis is—as discussed above— somewhat limited by its focus on social ties. While others have suggested the social network approach can and should be applied to all communities (see e.g. Haythornthwaite, 2007; Wellman, 1982) and digital libraries' communities (Farooq, Ganoe, Carroll, & Giles, 2009; Neuhold et al., 2003; Star et al., 2003), there are no known studies—besides a pilot test by the present author (Worrall, 2010)—directly applying social network analysis or the underlying concepts of range and density to examine the social networks of digital library users or community-building and collaboration activities by members of such networks. Further exploration of the potential of social network analysis in studying the communities of social digital libraries and community-building and collaboration behaviors is needed.

      2.5.2.5. Situated context. Bishop's framework of situated context (Bishop, 1999; Bishop et al., 2000) proposed to examine how users use a digital library in the context of individual information uses and the social interactions taking place between individuals and others in the community. She and her colleagues focused on virtual communities supporting real, physical communities, which became sub-communities (cf. Fischer, 1975) within the broader geographic location. They studied two early digital libraries, DeLIver and Prairienet, and found consideration of the context of users' individual and group information behaviors on multiple levels was lacking, with minor usability flaws and other minor issues becoming "insurmountable

molehills" (Bishop, 1999, p. 97) to successful individual and group use of the digital libraries and to the building of community around them. Bishop et al.'s view of collaboration was similar to the consensus, and a focus of much of their study was on the deliberate (i.e. goal-driven) information seeking behavior of their users.

      2.5.2.6. Boundary objects. Star's boundary object theory (Star, 1989; Star & Griesemer, 1989) is discussed at significant length in section 2.7 below. Based around Strauss's (1978) social worlds and first used in science and technology studies, it has been applied to and extended in studying social digital libraries by Star, Bowker, and Neumann (2003) and Van House (2003), with similar application proposed by Fleischmann (2007a, 2007b). In the context of CoPs and Chatman's view of information worlds (Burnett et al., 2001; Chatman, 1992, 1996), Star et al. found digital libraries could sometimes be successful at integrating existing overlapping communities and information worlds and building new communities, with the potential to support collaboration across boundaries. The translation between these different communities is difficult; it requires digital libraries to "fit with ... [existing] practices" across multiple existing communities while supporting emergent work processes and the formation of new communities (Van House, 2003, p. 290).

2.5.3. Potential Implications for Social Digital Libraries

      No one approach, method, theory, or model has already been determined to be *the* way to support collaboration and community-building in and around digital libraries. Social annotations are promising; wikis might prove useful, given further study of their advantages and disadvantages. Social constructionism theory, situated context, boundary object theory, and social network analysis show significant promise as approaches to studying and improving social digital libraries. The most common theme in the literature is the need to study the cognitive, institutional, cultural, organizational, and—above all—social contexts of digital libraries, to gain a complete picture of their roles in communities of and collaboration between users. Communities, networks, and collaboration within and between them cannot be supported in a digital library that ignores the socially constructed conversation it is a natural part of (Gazan, 2008). Studies and methods applying well-grounded, context-sensitive, and flexible theories and conceptions of communities and collaboration provide the most insightful findings and the highest chances of success.

2.6. Virtual Book Clubs

Before considering appropriate theoretical grounding for a study of social digital libraries, another area of research requires brief discussion. As explained later in Chapter 3, this dissertation study focuses on LibraryThing and Goodreads, two digital libraries and online communities for lovers of books and of reading, and on nine groups from the two sites. These groups can be conceived of as virtual book clubs, and so a short review of the literature in this area provides additional appropriate context. Most of this literature has focused on using virtual book clubs in K-12 or public library-based education and reading programs (e.g. Scharber, 2009; Scharber, Melrose, & Wurl, 2009) or on the practical implementation of virtual book clubs by libraries (e.g. AuYeung, Dalton, & Gornall, 2007). These topics are not the focus of this dissertation, but a few other selections from the literature have considered users' participation, interaction, or information behavior in the context of a virtual book club as community, as is of interest here.

Rehberg Sedo's (2003) survey of 251 international readers and members of face-to-face and virtual book clubs, focused on reading practices, found that members participated in virtual book clubs to connect with others like them, for intellectual stimulation, for fun, to read books they would not read on a regular basis, and to talk with others about the books they were reading. The topic or choice of books the virtual book club was reading was a factor for a plurality of members. Discussion of the meaning and interpretation of books occurred for about half of the members, with many of these discussions bringing in personal opinions, feelings, and values. Differences in these, and the opportunity presented to learn new ideas and share new experiences, were valued by a majority of the club members in Rehberg Sedo's study. She called for further research on virtual book clubs using mixed methods and to explore community phenomena (e.g. power hierarchies, identity and practice-making) in this context.

Rehberg Sedo edited a later book (Rehberg Sedo, 2011b) which includes, as part of the introduction, a brief review of additional studies that pay "critical attention to the social aspects of reading and [focus] on the discussions that take place within groups, their reading lists, and the contexts in which the reading takes place" (p. 10). Many of these are of face-to-face book clubs, including most of the historical and present-day studies reported in the book. Nevertheless, when taken as a whole they provide a clear view of how this subset of book club research sees the concept of community: it "take[s] many forms and serve[s] many purposes," it can provide

"emotional gratification … [and] a sense of belonging," it can help one feel "part of something larger," it can fulfill a "need for emotional connections with other people," and it "is constructed and maintained socially" (p. 11). These are similar to the characteristics associated with online communities (see section 2.2 above).

Two chapters of the Rehberg Sedo (2011b) edited book examined online book discussions. Kiernan (2011) focused on the positive role of television media in encouraging reading, the impact of new readers and book club members on the culture of reading, the view of publishers and reviewers in this context, and the influence of book clubs associated with television media. Rehberg Sedo's (2011a) own study (conducted in 2002 and 2003) of a book club dedicated to young adult (YA) literature, where the members served as "cultural intermediaries … between the online [YA] literature reading community and the off-line communities in which young adults live" (p. 102), explored issues of agency, power, norms, rules, and authority uncovered through the club's discursive practices, simultaneously "oppress[ing] and giv[ing] voice to individual readers" (p. 102) and "establish[ing] and reinforc[ing] cultural authority" for the intermediaries (p. 118). The dynamics of norms, rules, values, and practices present and socially constructed within the book club were impacted by, and impacted on, the broader communities and society that intermediaries were part of. This finding is in clear agreement with the scholarship established around social informatics, social constructionism, the social worlds perspective, and the theory of information worlds (the latter two mentioned in section 2.2 and discussed in greater depth below).

Fister's (2005) article provides a deep description of one e-mail list-based "reading list" and virtual book club, focusing on those features that made it an online community. Reviewing her article, one sees that participants shared humor and in-jokes, discussed their everyday life often, had established many social ties with others, felt solidarity in their reading "addiction," and valued the group for providing emotional support, all common characteristics of strong, established online communities. Fister described the practices by which the group read books together, led by volunteer "question maestros" who would lead and moderate discussions and provide additional material and guidance as necessary and desired (p. 306). Many of the characteristics Fister identified in this group are in common with those Rehberg Sedo found in her study and discussed in the introduction to the book she edited.

Elsayed (2010) surveyed the moderators of seven online Arab book clubs, augmenting this data with observation of the book clubs' online spaces. His study found low participation rates and discussions of mixed depth, many being superficial at best; this proves not all virtual book clubs are strong online communities with many social ties like those identified by Fister and Rehberg Sedo. Elsayed nevertheless concluded online book clubs were "a promising environment for promoting reading" and for motivating the contribution and exchange of ideas, information, and knowledge (p. 246). Elsayed explored the processes at work in the book clubs for choosing which books are of interest or should be read as a group, with some variety in these appearing across the groups but member voting being most common; and for discussions of books once chosen and read, which in some groups was moderator-led and in others was more open.

While Foasberg (2012) focused her study of reading challenges and the social dynamics and processes behind them on book blogs instead of book clubs, it shares many similarities with the work of Rehberg Sedo, Fister, and Elsayed. Foasberg observed and described three specific case studies of book challenges in depth. She found such challenges allowed virtual book club members to discuss what they were reading and form bonds and social ties with readers who shared interests, values, or beliefs. Many challenges, while blog-based, linked to LibraryThing, Goodreads, or other social media venues (e.g. Twitter) as an additional venue for discussion. She stated that generalizing "about the communities formed by reading challenges is difficult" (p. 40), but that common elements existed: different levels of participation, updates and discussion via social media, and—for about a fourth of the challenges—a form of prize or reward for completing the challenge. Foasberg believed the communities that emerged were quite different from those formed from social network-based sites (which LibraryThing and Goodreads can be considered): "the challenge [did] not form a boundary to the community," since blogs were open to others who were not participating in a given challenge and allowed for a broad, "content-focused" community to develop around them (p. 50). Foasberg suggested further ethnographic research on reading challenges, with emphasis on those taking place via book blogs.

Research by Greene (2012) explored how youths' identities were constructed in a virtual book club on Facebook. While not examining a broad range of information behavior, Greene was explicit in positioning virtual book clubs as online communities and considered the influence of a sense of community on identity construction. She found emotional safety was present through

38

emoticon and acronym use as normative behavior; users took on roles, such as a caregiver expressing a mothering stance as part of discussions. Greene further examined the roles played by facilitation and gender perspective in constructing identity, but these parts of her study are of less direct relevance to this review.

In sum, the existing virtual book club literature has provided thick description of cases of such groups and shown the emergence of general characteristics of users' participation, interaction, and information behavior, and of the communities that have been formed around and within such groups. None of the known literature has placed such a study in the context of well-grounded theory (with the exception of Greene's work, not yet published in journal article or book form). Except for some hints in Foasberg's study of book blogs, none of the literature has examined the roles played by a given venue or technology (e-mail list, social network, blog, etc.) in the communities and information behaviors of members of a virtual book club, or the roles that might be played by a social digital library in such a group.

2.7. Boundary Object Theory

Boundary object theory, first developed in science and technology studies (STS) by Susan Leigh Star, can be a strong element of a well-grounded, context-sensitive, flexible theoretical framework for studying social digital libraries. It has been applied to and extended within many disciplines, including library and information science (LIS), to study the interactions taking place and the objects people create and use in the context of crossing the boundaries of different social worlds and communities. Within LIS and cognate fields, it has been applied to studying the information behavior of users, communities, and organizations; information systems that serve multiple social and information worlds; and interrelations and interactions between these two elements. This section reviews boundary object theory as developed by Star and Griesemer (1989; see also Star, 1989), how Star and others have developed it over time, and how researchers have applied it within LIS and related fields. It analyzes and evaluates the key concepts and propositions of the theory and its resulting strengths and weaknesses.

Star's PhD education was in ethnographic sociology under Anselm Strauss at the University of California, San Francisco, earning her degree in 1983 (Zachry, 2008, p. 439). She had become interested in artificial intelligence and computer science after working with Carl Hewitt of the Massachusetts Institute of Technology (MIT) (p. 438). At the time of her

development of boundary object theory, Star was an assistant professor of information and computer science at the University of California-Irvine (Star & Griesemer, 1989), working with Rob Kling and others in STS and the area since labeled "social informatics" (see Kling, 1999). In her career, she worked as faculty and conducted research in sociology, LIS, STS, social informatics, computer-supported cooperative work (CSCW), communication, and feminist studies before her unfortunate passing in 2010 (Clarke, 2010).

2.7.1. Core Concepts

There are four core concepts used in boundary object theory: *social worlds*, *translation*, *boundary objects*, and *coherence / convergence* (given separate names but the same concept). All were derived from the work of others, but the degrees of derivation and modification by Star and Griesemer (1989) vary.

2.7.1.1. Social worlds. Strauss (1978) developed his concept of *social worlds* within the symbolic interactionist school of sociology originating at the University of Chicago (see also Clarke & Star, 2008). This concept and the framing concepts within it were discussed in section 2.2.4 above. It was an abstract concept, but one concrete enough to be operationalized and reliably applied in research. The framing concepts of activities, sites, technologies, and organizations provide limitations, but Strauss intended for broad and flexible interpretation of these. Star and Griesemer (1989) used Strauss's concept as-is; the remainder of the theory also fell within the social worlds framework (Clarke & Star, 2008).

2.7.1.2. Interessement and translation. Boundary object theory draws on the derived concepts of *interessement* and *translation*, the latter adapted for use in the theory. Interessement was first developed by Latour, Callon, and Law from multiple case studies of the sociology of scientific practice, as part of actor-network theory (ANT). Star and Griesemer (1989) defined it as follows:

> [T]o create scientific authority, entrepreneurs gradually enlist participants (or in Latour's word, 'allies') from a range of locations, re-interpret their concerns to fit their own programmatic goals and then establish themselves as gatekeepers (in Law's terms, as 'obligatory points of passage') [(Callon & Law, 1982; Law, 1987; both as cited in Star & Griesemer, 1989, p. 389)] …. Latour and Callon have called this process *interessement*, to indicate the translation of the concerns of the non-scientist into those of the scientist. (p. 389)

Translation—also derived from the work of Latour, Callon, and Law on ANT—was defined in the context of multiple social worlds as "the task of reconciling [the] meanings" of objects, methods, and concepts across these worlds (Star & Griesemer, 1989, p. 388) so people can "work together" (p. 389), drawing on Strauss's social worlds.

Translation and interessement as defined by Latour and his colleagues were limited to the study of scientists. Star and Griesemer (1989) felt an ecological approach to analysis within the social worlds framework (see Clarke & Star, 2008; Strauss, 1978) considering all possible viewpoints was a better approach, one which had no limitations on which individuals and social worlds could be studied. They extended the concepts to allow for multiple translations, gatekeepers, or "passage points" to exist between different social worlds (p. 390), corresponding to and going beyond Latour and Callon's conception of interessement.

2.7.1.3. Boundary objects. The conception of *boundary objects* themselves, while a unique element of Star and Griesemer's theory, was still derived from the work of Strauss on social worlds and Latour, Callon, and Law on interessement. Boundary objects were theorized to exist where social worlds intersected with each other, requiring a translation process or interessement to occur. As such, they could be considered an extension of the "passage points" of Law, although they do not serve an identical role (see Star & Griesemer, 1989, p. 390).

Boundary objects were defined as objects crossing the boundaries between multiple social worlds, used within and adapted to many of them "simultaneously" (Star & Griesemer, 1989, p. 408) and "'sit[ting] in the middle' of a group of actors with divergent viewpoints" (Star, 1989, p. 46). They "adapt to local needs" within a social world but are "robust enough to maintain a common identity across sites" (p. 46). The boundaries of boundary objects themselves may vary in permeability and fixedness. Boundary objects can be either abstract, concrete, both simultaneously, or somewhere along a continuum between these extremes (Star & Griesemer, 1989, p. 408). For example, Star and Griesemer's original case study identified maps of life zones in California as boundary objects. These were concrete for biologists because they were familiar with the ecological concepts they portrayed, but "highly abstract" for the public and professionals from other worlds who were not as familiar with the concept of life zones (p. 411). This conception was developed inductively based on the boundary objects identified in Star and Griesemer's (1989) case study and on logical inferences from the work of Latour, Callon, Law, Strauss, and others. While the boundaries of the concept were at first restricted to studies of

scientists—much like interessement—further applications and extensions of the theory have proved its generalizability to other settings.

2.7.1.4. Coherence and convergence. Another concept used in boundary object theory is *coherence*, derived from the concept of intersecting social worlds (Strauss) and the results of translation (Latour and colleagues). Star and Griesemer (1989, p. 390) stated the "coherence of sets of translations depends on the extent to which entrepreneurial efforts from multiple worlds can coexist," with "an indeterminate number of coherent sets of translations" possible. While they never gave coherence an explicit, glossary-style definition, it is easy to determine coherence is the degree of consistency between different translations and social worlds. Boundary objects play a critical role "in developing and maintaining coherence across intersecting social worlds" (p. 393).

Convergence is a more recent development—at least in name—extending coherence. It considers to what degree the "tools, systems, interfaces, and devices for storing, tracking, displaying, and retrieving information"—conceptualized as "information artifacts"—"are fitted to" the communities of users that create and work with them (Star et al., 2003, p. 244; see also Bowker & Star, 1999, pp. 46–49). Star and colleagues applied the concept of information worlds, as used but ill-defined by Chatman in her theory of normative behavior (see section 2.8.2.1), to the result of this convergence process. This view of convergence is a restatement of coherence, but from a different perspective. The starting point is the boundary objects themselves—in the guise of information artifacts—and not the social worlds. The focus is less on the translation process and more on the consistency between the results of the process and the communities—or social worlds—that are part of it. The difference between coherence and convergence is in perspective; the two as used by Star and her colleagues are not truly separate concepts.

2.7.2. Propositions

While many theories have explicit propositions explaining the relations between their concepts (see Grover & Glazier, 1986; Meleis, 1991), the propositions of boundary object theory are implicit, requiring analysis to derive. Such an analysis identifies five relational propositions in the statements made by Star and Griesemer (1989): two propositions discussing the relation between boundary objects and social worlds, and three propositions discussing the role boundary objects play in the process of translation and in determining coherence. The following analysis draws from Meleis's (1991) discussion of how theories should be evaluated.

42

2.7.2.1. Boundary objects across social worlds. Star and Griesemer (1989, p. 393) stated boundary objects "both inhabit several intersecting social worlds … and satisfy the informational requirements"—or what LIS terms information needs—"of each of them." They "are weakly structured in common use, and become strongly structured in individual-site use" (p. 393). These statements can be restated as two formal propositions which relate boundary objects and social worlds:

P1.   Boundary objects are weakly structured enough to inhabit and be used across multiple social worlds, but become strongly structured when used within individual social worlds.

P2.   Successful boundary objects satisfy the informational requirements (needs) of each of the social worlds they are used within; more successful boundary objects should satisfy more requirements from more social worlds.

These two propositions have been made probabilistic in practice, and could be reversed, although the degree of reversibility is low. They imply coexistence, not sequential cause-and-effect relationships; other variables could come into play as contingencies in determining the success of boundary objects, and the degree to which a boundary object is successful will vary.

2.7.2.2. Boundary objects' role in translation and coherence. Star and Griesemer (1989, p. 393) further stated boundary objects' structure "is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds." Three related claims are made:

1. "the central cooperative task of social worlds which share the same space but different perspectives is the 'translation' of each others' perspectives" (p. 412);

2. translations are "perform[ed] … to craft objects containing elements which are different in different worlds," i.e. boundary objects (p. 412); and

3. mismatches between the overlapping meanings and representations of these objects across social worlds "become problems for negotiation," which to be successful (and maintain coherence) must take care to manage the boundary objects, their meanings and representations, and the interfaces they provide between social worlds (p. 412).

These statements, taken together, can be formally stated as three further propositions:

P3.   Boundary objects, due to their recognizability across social worlds, should facilitate translation and support a level of coherence between these worlds.

P4.   A successful translation and negotiation process is one supporting and maintaining a high level of coherence between social worlds.

P5.   A high level of coherence should result from careful management of the creation, crafting, meaning, and representation of boundary objects and the interfaces they provide between and across social worlds.

These propositions are what Meleis (1991) terms stochastic, because successful translation and high levels of coherence *should* occur, but are not guaranteed. Proposition 3 is not reversible, and other factors may correlate with the facilitation of translation and support of coherence, implying coexistence and substitutability. Contingencies impacting on Proposition 1—and the degree of success of boundary objects—may carry over to Proposition 3. Propositions 4 and 5 are reversible and coexisting, since a successful translation process, careful management of boundary objects, and a high level of convergence should correlate with each other. Proposition 4 is contingent on other potentially substitutable factors that may influence the success of the translation process, although these are not included in the theory. Proposition 5 is sufficient and necessary because all factors which could be considered would be placed by Star and Griesemer (1989) under the banner of careful management of boundary objects and their interfaces, at least within the probabilistic and stochastic confines of the proposition. This is despite Meleis's (1991) statement that sufficient and necessary propositions are uncommon in social science; in this case the breadth of factors considerable under the careful management of boundary objects allows these limitations to be overcome.

2.7.2.3. Convergence. As mentioned earlier, convergence and coherence can be considered the same concept from different perspectives. Social worlds and CoPs, while conceptualized by different researchers and having different definitions, were considered interchangeable by Bowker and Star (1999, p. 294). As such, Propositions 3, 4, and 5 about coherence could apply to convergence and CoPs, through substituting these terms for coherence and social worlds respectively. Having "use and practice fit design and access" (Star et al., 2003, p. 244) refers to the careful managing of how boundary objects and their interfaces are created, crafted, and represented, included in Proposition 5. Any relation between boundary objects, convergence, and information worlds as concepts is, however, a relation between boundary

object theory and Chatman, Burnett, and Jaeger's theories, which used the concept of information worlds; it is not a proposition within boundary object theory.

2.7.3. Theory as a Whole

Boundary object theory has many interrelations between its concepts, as seen above. These relations act in what Meleis (1991, p. 227) termed "a chain-link fashion": Proposition 1 links boundary objects to social worlds; Proposition 2 explains the success (or not) of that link; Proposition 3 links boundary objects to coherence; Proposition 4 links successful translation and successful coherence; and Proposition 5 explains if the link between coherence, boundary objects, and social worlds is successful. The theory is based on and around these concepts, which are "concatenated" together (p. 227); boundary object theory is thus a concatenated theory. It takes a field approach in its construction, focusing "on the relationships between the phenomena and thus … [on explaining] the phenomena by the relationships" (Meleis, 1991, p. 227); it is also an explanatory theory (p. 229). Boundary object theory is an inductive grounded theory that takes advantage of the strengths of deductive and constructive reasoning to further its generalizability, applicability, and adaptability.

Star and Griesemer's (1989) original application of boundary object theory was to an applied problem—translation by scientists between different social worlds—in the STS field. Boundary object theory has become a grand theory (as defined by Glazier & Grover, 2002) through its wide application in and extension by other disciplines, but could be placed within or near the category of middle-range theories due to its "substantive focus" (Meleis, 1991, p. 228) on the role of boundary objects in crossing social worlds; it does not try to explain everything about social worlds or boundary objects as a true grand theory would. This apparent duality shows in the propositions: they are not restricted to scientists and show high levels of substitutability and stochasticity, allowing for many and varied uses, interpretations, and extensions. The ecological approach taken by Star and Griesemer (1989), considering the view of every social world, allowed for wide application of their theory and for it to serve as a macrotheory (as defined by Meleis, 1991).

2.7.4. Further Development and Application

While Griesemer has not contributed further to boundary object theory, Star applied her theory and extended the scope of the problems it addresses. Her most cited work is the book *Sorting Things Out: Classification and its Consequences*, written with Geoffrey Bowker

(Bowker & Star, 1999); they conceived of classifications as boundary objects used across multiple CoPs, new classifications being created when existing systems come into conflict. Bowker and Star introduced the concept of boundary *infrastructures*: sets or "regimes of boundary objects"—such as information objects and systems—which support multiple CoPs and social worlds (p. 313). Star applied boundary object theory in the context of CoPs (Bowker & Star, 1999, p. 294; Star, 2002, p. 118) and information worlds (Star et al., 2003), and in studying artificial intelligence (Star, 1989), electronic community systems (Star & Ruhleder, 1996), and digital libraries (Star et al., 2003), the latter introducing the revised concept of convergence. Her work explored the difficulties faced by designers and developers of information systems in supporting, in social and organizational contexts, successful translation between and coherence across the multiple social worlds and communities the systems are intended to serve.

Star believed boundary objects are "interpretively flexible" in many but not all locations and differ in their nature and shape "depending on the work or informational needs of the different social groups" part of their creation and use (Zachry, 2008, p. 452). Before her passing (see Clarke, 2010), Star was working on a book extending boundary object theory and exploring "the idea of different types of boundary objects" (Zachry, 2008, p. 454). In one of her last published papers (Star, 2010), she argued further consideration of types of boundary objects and their "material/organizational structure" (p. 602) was needed. She was interested, building on her work with Bowker, in what one might call the lifecycle of standardization of boundary objects: how they progress through standardization attempts, "the back and forth between ill structured and well structured," and the eventual creation of "new boundary objects" by so-called "residual categories"—outsiders and others on the periphery (p. 614).

Other researchers have applied boundary object theory or developed it further; citation analysis using Web of Knowledge shows such usage has continued to increase, with about three times as many citations of Star and Griesemer's (1989) paper in 2013 (150) as 2005 (53). The majority of use of boundary object theory and/or its concepts has been in the fields of management, history and philosophy of science, LIS, computer science, and sociology. Applications of boundary object theory have included the study of communities, collaboration, organizations, information systems (in various guises), and information behavior.

While reviewing all 1,446 total citations (as of June 2014) is beyond the scope of this chapter, the studies of Bødker and Christiansen (1997), Bannon (1997), and Lutters and

Ackerman (2007) in CSCW are worth noting; the latter provided a brief, but useful summary of boundary object theory's application in CSCW research (pp. 344-345). In management and knowledge management Pawlowski has applied the theory alongside CoPs (Pawlowski & Robey, 2004; Pawlowski, Robey, & Raven, 2000), and many others have applied the concepts from boundary object theory to KM concerns. This includes the work of Brown and Duguid (1996, 1998); Wenger (1998, 2000); Bechky (2003); Hislop (2004); Kimble and Hildreth (2005); Levina and Vaast (2005); and Kimble, Grenier, and Goglio-Primard (2010) on boundary objects, gatekeepers, and boundary spanners in KM. The LIS field has examined the information behavior of users, communities, and organizations and how it relates to information systems—including databases and digital libraries—serving as and containing boundary objects. A notable study is Van House's (2003) conceiving of the Calflora subset of the University of California–Berkeley Digital Library as a boundary object. She found trust to be a major issue, arguing to build such trust, developers of digital libraries should conceptualize them and have them act as boundary objects: converging users' social and information worlds together and supporting their current and emerging work processes, while retaining a common system identity. Fleischmann (2007a, 2007b) proposed a theoretical framework he termed "boundary objects with agency" to examine the embedded values in digital libraries, building on social worlds, boundary objects, and the concept of nonhuman agency present in actor-network theory.

Further developments of the theory have come from many authors. Henderson (1991) added her concept of "conscription devices" (p. 452): deliberately constructed objects that "enlist group participation" and contain "knowledge created and adjusted through group interaction … [with] a common goal" (p. 456). Akkerman and Bakker (2011) conceptualized *transformation* as one of four learning processes taking place around boundaries and boundary objects. They identified five potential stages: (a) confrontation, where "intersecting worlds [are forced] to seriously reconsider their current practices" (p. 15); (b) recognizing and building a shared problem space, including boundary objects as a part of this; (c) hybridization, where a new world begins to form around boundary objects; (d) crystallization, where the new hybrid world becomes "embed[ded] … in practice so that it has real consequences" (p. 17); and, in some cases, (e) "maintaining uniqueness of the intersecting practices," where the established worlds reinforce themselves as distinct (p. 18). Akkerman and Bakker's stage view of transformation is

similar to Star's (2010) recent discussion of the life cycle of boundary objects and the social worlds they interact with.

Researchers have further developed the theory by exploring the degree of flexibility boundary objects have, an area Star argued needed further study (Zachry, 2008). Fujimura's (1992) work provides an early example of this: she argued boundary objects are too flexible, conceiving of "standardized packages" (p. 176); they combined multiple boundary objects with "standardized methods … in ways which further restrict and define each object," reducing the possible interpretations without "entirely defin[ing] them" (p. 176). Gal, Yoo, and Boland (2004) looked at the flexibility of boundary objects, taking the concept of information artifacts (also seen in Star et al., 2003) as ever-changing boundary objects that changed the social worlds, information worlds, and information behavior of the various stakeholders in a construction project. They developed a model of "the dynamic interplay" among changes and adjustments in social identity, infrastructure, community, and the boundary objects themselves (p. 198). Lutters and Ackerman (2007) argued, based on empirical evidence, that flexibility for boundary objects in the situated context of negotiation and deviations from official process was necessary. They believed boundary objects should be viewed through a temporal lens: "boundary objects existed within a history greater than themselves" (p. 366).

Carlile (2002) was interested in the categories of boundary objects identified by Star and Griesemer (1989), arguing successful boundary objects—producing high levels of coherence and convergence—have three key characteristics: (a) "a shared syntax or language" for knowledge representation (Carlile, 2002, p. 451), shortened to "representing" (p. 453); (b) a way for "individuals to specify and learn about their differences and dependencies across a given boundary" (p. 452), shortened to "learning"; and (c) a facilitation of "individuals ... jointly transform[ing] their knowledge" (p. 452), shortened to "transforming" (p. 453). His work has been often cited in management and knowledge management, where he has continued his research and developed a framework describing "three progressively complex boundaries … syntactic, semantic, and pragmatic," alongside "three progressively complex processes … transfer, translation, and transformation" (Carlile, 2004, p. 555).

2.7.5. Limitations and Criticisms

While boundary object theory has been praised by most, a few researchers have criticized the theory—either as a whole or elements of it—and pointed out its limitations. First, Fujimura

(1992) and Lee (2007) have questioned if a fully ecological approach can be taken, Fujimura contending whichever viewpoint or social world there was the most data about would be unavoidably central to any study of boundary object(s), despite Star and Griesemer's best efforts. Second, the degree of flexibility of boundary objects has been questioned. Fujimura (1992) believed they had been conceptualized as having too wide a "margin of negotiation" (p. 175), and their weak, flexible structure across social worlds would hamper their possible success in encouraging continuing coherence between social worlds. In contrast, Lee (2007) believed boundary objects were not flexible enough. Gal, Yoo, and Boland (2004) and Lutters and Ackerman (2007) stressed at least some boundary objects must remain flexible in situated and temporal contexts, but the processes of standardization discussed by Fujimura (1992), Bowker and Star (1999), and others must be considered. Third, Lee (2007, p. 313) did not believe boundary object theory accounted for "active negotiation of shared understanding," arguing "the boundary objects concept is not incorrect … [but] it is incomplete" and concluding the active and chaotic negotiation processes she identified in her study were major elements missing from boundary object theory. Other factors may impact on and influence boundary objects, such as Van House's (2003) identification of barriers to information sharing: fear over potential misuse, need to make data presentable, conflicts with professionals from other fields and worlds, and concerns over trust. Contextual factors must not be ignored in studies of boundary objects within and across social worlds and communities.

The introduction of convergence by Star, Bowker, and Neumann (2003; see also Bowker & Star, 1999, pp. 46–49) is a potential liability, due to their use of multiple conceptions of community. If social worlds, CoPs, and information worlds are fully compatible with each other, then convergence implies a cycle where social worlds, CoPs, and information worlds converge with information artifacts to create information worlds. However, Star et al. (2003, p. 244) used a different definition of an information world than the concept's originators (see section 2.8.2 below), as "the collection of information resources employed by an individual, organization, institution, or other group to solve [information] problems, learn, play, and work." They removed from the equation shared activities (as in social worlds), information behaviors, and the concepts of social norms and social types originating in Chatman's theory of normative behavior. Star, Bowker, and Neumann's idea of information worlds as the result of convergence should not be considered to be the same concept as Burnett and Jaeger's version of information worlds or the

conception used but ill-defined by Chatman in her work. Because coherence has no required cycle and is compatible with other theories and conceptions of community, it is a better and more flexible concept to apply to many research problems.

2.8. A Theoretical Framework for Social Digital Libraries

Two other theories are also important in the context of social digital libraries: Strauss's social worlds perspective and Burnett and Jaeger's theory of information worlds. While these theories were introduced in section 2.2 as including relevant concepts of community, their important relations with boundary object theory suggest further analysis and synthesis is appropriate. Such a synthesis with boundary object theory can serve as a well-grounded theoretical framework for social digital libraries.

2.8.1. Social Worlds Perspective

Strauss's social worlds perspective (Strauss, 1978; see also Clarke & Star, 2008) was discussed in sections 2.2.4 (as a concept of community) and 2.7.2.1 (as a component of boundary object theory). As a brief review, Strauss (1978) built his social worlds perspective on the work of Shibutani (1955), who argued there is a great "variety of social worlds," each with its own "organized outlook" based on the norms, beliefs, interaction, and communication of a given group of people (p. 566). Strauss (1978) proposed social worlds consist of "activities, memberships, sites, [and] technologies" in relation to social change (p. 121). A social world included

- "at least one primary *activity* … strikingly evident";
- "*sites* where activities occur";
- "*technology* … [for] carrying out the social world's activities"; and
- in established social worlds, "*organizations* … to further one aspect or another of the world's activities" (p. 122; emphasis added).

To these four key concepts, Strauss added social worlds could and would "intersect … under [various] conditions" and segment into smaller subworlds given sufficient analysis (p. 122).

2.8.2. Theory of Information Worlds

2.8.2.1. Chatman's small worlds research. Burnett and Jaeger's (2008; Jaeger & Burnett, 2010) theory of information worlds built on the work of Chatman, whose work culminated in her theory of normative behavior (Burnett et al., 2001). She focused on an interest in what she called *small worlds*, ascribing (in Chatman, 1991) her use of this term to her

dissertation chair, Patrick Wilson (1983). Wilson stated that, based on one's social location, the information and knowledge one would need or be interested in would differ: "what one needs to know … depends in part on what others expect one to know" (p. 150). Wilson labeled worlds where people were selective in their choices of information, knowledge, and topics of interest "small worlds." While neither Chatman or Wilson had formal sociological training (Fulton, 2010, p. 239; Maclay, 2003), they were well-read in sociology and anthropology (evident by the citations in P. Wilson, 1983, and in Chatman, 1983, p. 104). Small worlds to Wilson (1983) and Chatman (1991) were social worlds (Shibutani, 1955; Strauss, 1978) where people experienced a limited view of the broader social world; a "small world life" was one "played out on a small stage … characterized by commonness or routineness" (Pendleton & Chatman, 1998, p. 733). Wilson (1983) focused on information and knowledge sources and their perceived authority, while Chatman took a broader approach to information (see Burnett et al., 2001; Chatman, 1991, 1992, 1996, 1999, 2000; Pendleton & Chatman, 1998). Jaeger and Burnett (2010) restated her recent views of small worlds as moving from "definable localized social groupings of people" towards a broader view of "social environments in which an interconnected group of individuals live and work, bonded together by common interests, expectations, and behaviors" (p. 21).

Chatman developed three theories in succession as she found existing theories lacking in explanatory power; these were information poverty (Chatman, 1992, 1996), life in the round (Chatman, 1999), and the culmination of her work, her theory of normative behavior (Burnett et al., 2001; Pendleton & Chatman, 1998). The latter examined small social worlds in the context of "normative behavior," that "viewed by inhabitants of a social world as most appropriate for that particular context" and socially constructed within that context (Burnett et al., 2001, p. 538). Chatman and her colleagues focused on four key concepts, first presented in Pendleton and Chatman (1998): (a) *social norms*, or the "standards of 'rightness' and 'wrongness' in social appearances"; (b) *worldview*, or the "collective perception held in common by members of a social world regarding those things that are deemed important or trivial"; (c) *social types*, "the [social] classification of a person"; and (d) *information behavior*, "a state in which one may or may not act on available or offered information" (Burnett et al., 2001, p. 537). Theoretical propositions were proposed (p. 538), but Chatman and Pendleton's (1998) and Burnett et al.'s (2001) studies focused on the concepts. The broadening of Chatman's thinking, moving beyond

information poverty and even small worlds themselves to an extent, can nevertheless be seen in these two works.

  2.8.2.2. Burnett and Jaeger's theory. Burnett and Jaeger (2008), while building on much of Chatman's theory of normative behavior, wanted to move beyond its limitation in small worlds. Chatman had used the term *information world* as early as the 1980s (see Chatman, 1983, 1987), but left it ill-defined, requiring its meaning to be interpreted based on her views of small worlds and social worlds. In developing their theory of information worlds, Burnett and Jaeger (2008) saw to be more explicit, combining Chatman's work with Habermas's on lifeworlds and the public sphere. Habermas's work conceptualized lifeworlds as "the collective information and communication environment—the social tapestry—of a society" (Burnett & Jaeger, 2008, "Public sphere" section, para. 7). Burnett and Jaeger believed many of Chatman's concepts could apply to both the smaller and larger worlds people are part of, and borrowed the concepts of social norms, social types, and information behavior from the earlier theory. Their version of information behavior was couched in somewhat broader terms than Chatman's, as "the full spectrum of normative [information] behavior … that are available to members of a … world" ("Small worlds" section, para. 8). In Jaeger & Burnett (2010) they included a refined version of worldview, termed *information value*, which related to the value judgments of different information within and across worlds. They preferred to term the resulting worlds *information worlds*, stressing the ability to examine the context of lifeworlds, small worlds, and other worlds of varied sizes, settings, or shapes.

  Jaeger and Burnett (2010) further refined their theory in a book, adding a fifth concept of *boundaries*, "the places at which information worlds come into contact with each other and across which communication and information exchange can—but may or may not—take place" (p. 8). Information worlds are social spaces, contiguous or overlapping, where individuals can "cross between the different worlds to which they belong" and interact with individuals from other worlds (p. 9), allowing for "multi-leveled" analysis of "the interactions between social norms and values, information, and community, particularly in situations in which multiple small worlds overlap" (p. 30).

  2.8.2.3. Propositions. No theoretical propositions were offered in either publication by Burnett and Jaeger (2008; Jaeger & Burnett, 2010), but Burnett has since written five propositions focused on defining the five core concepts and their roles within and across

information worlds (Burnett, Burnett, Kazmer, & Hinnant, 2012, p. 9), albeit these are as of yet unpublished. Further relational propositions can be extracted from the first two chapters of Jaeger and Burnett's (2010) book and grouped into three themes as follows:

P1. **Mutual influence**

    a. "Information behavior is simultaneously shaped by immediate influences," including "friends, family, co-workers, and trusted information sources … as well as larger social influences" such as "public sphere institution, media, technology, and politics" (pp. 7-8).

    b. The broader information lifeworld is influenced by the perspectives of the smaller information worlds that make it up and by public institutions such as the media, government, libraries, and schools.

    c. In return, these promote, constrain, or influence—to varying degrees—the movement of information between information worlds and, in some cases, within them.

    d. Information worlds can be seen on multiple levels—small, intermediate, and the broader lifeworld—which shape and are mutually influenced by each other and by their participants' behavior (p. 31); "social contexts are not, in most cases, isolated from one another" (p. 30).

P2. **Normative behavior**

    a. Each information world develops its own "normative ways in which information is accessed, understood, and exchanged both within the [information] world and with others outside that world" (p. 8).

    b. The common (i.e. social) norms, types, values, and behavior of each information world require individuals to "generally conform to the norms and expectations" of the world they are interacting with at any one time (p. 8).

P3. **Boundaries**

    a. Points of interaction with members of other information worlds "serve as the boundaries between different worlds" (p. 9).

    b. These boundaries are the conduit through which information flows between worlds. This information is understood in the context of each world's social norms, social types, information value, and information behavior.

c. Such interactions and information flow may lead to new information worlds being created or existing ones changing or being eliminated.

d. Information from the broader lifeworld "can be conceived of as a kind of 'boundary object'" (in the sense intended by Star and Griesemer); it exists apart from individual information worlds and as part of them, seen in the context of the world's norms, values, types, and behavior (p. 31).

2.8.3. Synthesis

Having presented Strauss's social worlds perspective and Burnett and Jaeger's theory of information worlds above, this section synthesizes these two together with boundary object theory to produce a well-grounded theoretical framework for studies of social digital libraries. The synthesis proceeds in three steps: (a) comparing the social world and information world lenses; (b) considering the results of coherence and convergence, under boundary object theory, in relation to information worlds; and (c) synthesizing these together into a rich, theoretical view of boundary objects in relation with existing and emergent communities and worlds.

2.8.3.1. Social and information: Two lenses on worlds. The framing concepts of the social worlds perspective and the theory of information worlds differ: the former focuses on activities, sites, technologies, and organizations, while the latter is concerned with mutual influence, normative behavior, and the five core concepts of social norms, social types, information value, information behavior, and boundaries. Nevertheless, Chatman (1991) had thought of small worlds as a special subset of a broader social world. While one could extend this to think of a small information world as a special subset of a broader social world, in the context of the higher-level information worlds added to the theory by Burnett and Jaeger (2008) this analogous reasoning breaks down; social worlds and information worlds were considered at multiple levels of analysis by their originators (Jaeger & Burnett, 2010, p. 30; Strauss, 1978, p. 121).

A different analogy is better for synthesis. Since both offer a multi-level understanding of social groupings, an information world should be seen not as a *subset* of a social world, but as a different *lens* or *perspective* on one. Strauss (1978) argued for focusing on his framing concepts, while Burnett and Jaeger (2008; Jaeger & Burnett, 2010) argued for theirs. Nevertheless, at its core each is concerned with the same base phenomenon of a world of people, of various size, who are engaged in interaction, communication, and social construction of this and other worlds.

Strauss, Burnett, and Jaeger all held these worlds or communities differ in one or more characteristics: size, shape, visibility, abstractness, permeability, and structure. They may intersect and overlap, or be contiguous; social and information worlds can also segment into smaller subworlds. Each theory takes a broad view of its framing concepts; Strauss (1978) construed activities, sites, technologies, and organizations as flexible, while Burnett and Jaeger (2008; Jaeger & Burnett, 2010) considered a wide range of social norms, social types, information value, and information behaviors, defining information to encompass data and knowledge.

Burnett and Jaeger's theory has stronger grounding than the views of social worlds taken by Shibutani (1955) and Strauss (1978) in previous theoretical and practical work in LIS. Its focus on information behavior, information flow, and the roles of information in the context of the worlds people are part of has clear applicability to multiple research tracks within the LIS field (many discussed by Jaeger & Burnett, 2010). The alternative, but compatible lens offered by Strauss and his social world perspective (see also Clarke & Star, 2008) can and should be applied where and when appropriate.

2.8.3.2. Information worlds meet boundary objects. As discussed in section 2.7.3.3, Star, Bowker, and Neumann's (2003) idea of information worlds as the result of convergence is not the same concept of information worlds as used by Chatman, Burnett, or Jaeger. Nevertheless, Star et al.'s work indicates how boundary object theory could expand beyond social worlds to other forms of community. Burnett and Jaeger's (2008; Jaeger & Burnett, 2010) theory of information worlds, given its compatibility and similarities with social worlds and its incorporation of boundaries as a core concept, is an obvious place where such expansion can take place in LIS contexts. The two theories have been used together in Burnett, Subramaniam, and Gibson's (2009) study of Latina IT professionals' social construction of gender as a boundary object in context of the IT industry as an information world, but solely as a framework for coding and analyzing data; a fuller theoretical synthesis is required.

Per Proposition 5 (as derived) of boundary object theory, coherence comes from careful management of boundary objects and the interfaces they provide between and across social worlds. The characteristics of information worlds impact the interface boundaries—the points of interaction—between them (Jaeger & Burnett, 2010). Information from the broader lifeworld is seen "as a kind of 'boundary object'" (p. 31). It is not much of a stretch, applying boundary

object theory further, to conceive of information from a *different* information world having a boundary with this one as a potential boundary object. Such boundary objects serve as partial, cohered expressions of multiple information worlds. They represent a portion of their socially constructed normative behavior, common meanings, and common ground of information and knowledge (cf. Bechky, 2003; Davenport & Prusak, 2000, p. 98; Olson & Olson, 2000, pp. 157–161; Wasko & Faraj, 2000).

This partial-but-common expression of norms, types, values, and behavior by boundary objects relates to the revised process of convergence discussed by Star, Bowker, and Neumann (2003). Per Jaeger and Burnett (2010), the multi-leveled interactions and information flow present in information worlds may lead to new information worlds being created or existing ones changing or being eliminated. Per Star et al. (2003, p. 244), a community has a better fit with an information artifact "when use and practice fit design and access" (Star et al., 2003, p. 244). Combining the two theories, for this to be true the artifact must be compatible with the community-as-information-world's norms, types, values, and behaviors in-use and in-practice. A good fit implies the artifact shares at least a subset of the characteristics of the information world. If the artifact is used by other information worlds, subsets of their characteristics will exert mutual influence on the artifact, turning it into a boundary object.

The combination of these different subsets—with some norms drawn from one information world, others from another, and yet others from still another—could then be seen as the norms, types, values, and behaviors of a *new* information world, emergent and socially constructed around the artifact-as-boundary-object as it converged the different information worlds together. The information flow allowed by the boundary object between these information worlds would have created a new world, one sharing sufficient elements of— common ground (cf. Bechky, 2003; Davenport & Prusak, 2000, p. 98; Olson & Olson, 2000, pp. 157–161; Wasko & Faraj, 2000) from—each of the original worlds to communicate, interact, and share information and knowledge with them. It would have coalesced, cohered, and converged into its own world and community surrounding the information artifact that began life as a boundary object, but has now become a local standard for the new information world.

2.8.3.3. All together now. Returning to the view through the lens of Strauss's (1978) social world perspective, boundary objects should act as common sites and technologies for people from different social worlds to engage in common information-based activities. As a new

community coalesces and establishes around the boundary object, it may form an organization—formal or informal—to further these activities. The full theoretical view established here can be summarized in propositional form:

P1.   Boundary objects serve as partially cohered expressions of the socially constructed characteristics—social norms, social types, information value, information behaviors, activities, and organizations—of the multiple information and social worlds they are used within and across.

P2.   Boundary objects, maintaining a common identity, act as common sites and technologies for information-based activities—including information and knowledge sharing—within, between, and across these worlds.

P3.   Over time, new worlds may coalesce, cohere, and converge around boundary objects, sharing a combination of norms, types, values, behaviors, activities, and (potentially) organizations, as the boundary object becomes a new, localized, and socially constructed standard.

This rich theoretical picture echoes Star's (2010, pp. 614–615) comments on the cycle between ill-structured and well-structured boundary objects and Akkerman and Bakker's (2011, pp. 15–19) conceptualization of the process of transformation. It further grounds the process of convergence in theory from sociology, philosophy, and information science; and synthesizes the interrelated work of Strauss, Star, Chatman, Habermas, Burnett, and Jaeger on social worlds, boundary objects, small worlds, normative behavior, lifeworlds, and information worlds.

2.8.4. Resulting View of Social Digital Libraries

Under the theoretical framework developed above, social digital libraries are used by and cross the boundaries of multiple social worlds, information worlds, and communities; they are socially constructed boundary objects (Van House, 2003), and should adapt to the "local needs" (Star, 1989, p. 46) of as many of these worlds and communities as possible. Serving as an interface and translation device between social and information worlds, they should reconcile the "meanings" and understandings across these worlds to allow users to "work together" (Star & Griesemer, 1989, pp. 388–389), collaborate, and interact. The translations they provide should be coherent and consistent for and with as many of the social and information worlds that use them as possible.

Social digital libraries should support the emergence of localized and common social norms, social types, information values, and information behaviors shared—to varying and potentially overlapping extents—by the different information worlds using them (Burnett & Jaeger, 2008; Jaeger & Burnett, 2010). Social digital libraries should act as common sites and technologies for users to engage in information-based activities (Strauss, 1978), including collaboration, information sharing, and knowledge sharing. In doing so, they should support the possible emergence of a broader community (information world, social world) as the social digital library converges portions of the multiple communities it serves.

2.9. Conclusion

This chapter has established the need for research on social digital libraries—content collected for a user community, services offered to the community, and one or more formal or informal organizations managing these content and services—as inherently social organizations and environments, socially constructed by users, communities, and organizations. While different conceptions of communities and collaboration may be included, a theoretical framework based in Star's boundary object theory and incorporating elements of Strauss's social worlds perspective and Burnett and Jaeger's theory of information worlds provides a well-grounded, flexible basis for studying social digital libraries as boundary objects. Research is needed to test part or all of this framework as a theory, using operationalized definitions of its concepts and propositions, but research should explore and describe what roles one or more digital libraries play, as socially constructed boundary objects, in supporting and facilitating collaboration, communities, and other socially constructive behaviors within and across social and information worlds. This latter task is more achievable at the present time, and so the following chapter begins the presentation of a study—this dissertation—that helps satisfy this latter need.

CHAPTER 3

METHOD

This chapter presents the methods and research design for this dissertation study. It begins by presenting the research questions and settings, the LibraryThing and Goodreads digital libraries. This is followed by an overview of the mixed methods research design used, incorporating a sequence of three phases. Each of the three methods—qualitative content analysis, a quantitative survey questionnaire, and qualitative interviews—are then presented in detail. The codes and themes used for analysis during the qualitative phases are discussed next. The chapter continues with sections on the management of the research data for this study; the validity, reliability, and trustworthiness of study findings; and ethical considerations. The invitation letters and informed consent statement; survey instrument; interview questions; a quick reference guide used for coding and analysis; and documentation of approval from LibraryThing, Goodreads, and the FSU Human Subjects Committee are included in appendices.

3.1. Research Questions

As stated in Chapter 1 the purpose of this research, taking a social perspective on digital libraries, is to improve understanding of the organizational, cultural, institutional, collaborative, and social contexts of digital libraries. The following two research questions satisfy the purpose of the proposed study within the approach, setting, and framework introduced in Chapter 1:

RQ1. What roles do LibraryThing and Goodreads play, as boundary objects, in translation and coherence between the existing social and information worlds they are used within?

RQ2. What roles do LibraryThing and Goodreads play, as boundary objects, in coherence and convergence of new social and information worlds around their use?

These two questions explore the existing and emergent worlds that may surround digital libraries in social, collaborative use and behavior. RQ1 focuses on examining how LibraryThing and Goodreads may support existing collaboration, communities, and other social activities and behaviors across social and information worlds, with a specific eye to translation, characteristics indicating coherence of existing worlds, and uses of the digital libraries as boundary objects. RQ2 focuses on examining how LibraryThing and Goodreads may support coherence and convergence of new, emergent social and information worlds and their characteristics, as

indicated by use of the digital libraries (as boundary objects) as new, localized standards. The questions focus on the *roles* of each digital library, be there one role, multiple roles, or possibly no role played by LibraryThing and Goodreads. These roles may or may not include explicit support for collaboration, communities, or social contexts. The research questions use and incorporate the definitions, concepts, and propositions of social digital libraries (see section 2.4.3), the social worlds perspective (see sections 2.7.1.1 and 2.8.1), the theory of information worlds (see section 2.8.2), and the synthesized theoretical framework for social digital libraries (developed in section 2.8.3). Coherence and convergence are seen as the same concept in boundary object theory (see section 2.7.1.4), leading to overlap between the concepts—and the two research questions—in operational data collection and analysis. The connotations of the two indicate convergence will lead to new, emergent worlds, and this meaning is indicated by its use in RQ2, but not RQ1.

3.2. Setting: Case Studies of LibraryThing and Goodreads

In this dissertation study, the boundary objects of interest are defined and given as two digital libraries: LibraryThing and Goodreads (see sections 3.2.2 and 3.2.3 below). This approach is opposite the procedure used by Star and Griesemer (1989), who first identified the populations of communities, users, and stakeholders in their study, then examined the boundary objects they used. Starting with the boundary objects is in line with Star's later work (Bowker & Star, 1999; Star et al., 2003). Bødker and Christiansen (1997); Gal, Yoo, and Boland (2004); Henderson (1991); and Pawlowski, Robey, and Raven (2000) have used this approach to varying extents, proving its validity and usefulness as an approach to take for studying social digital libraries as boundary objects.

3.2.1. Case Study Approach

This research takes a case study approach, where "a detailed" and intensive "analysis of … individual case[s]"—LibraryThing and Goodreads—will be performed (Fidel, 1984, p. 274). The research looked to generate "a comprehensive understanding of the event under study"— uses of these digital libraries as boundary objects within and across existing and emergent social and information worlds—and develop "more general theoretical statements about regularities in the observed phenomena" surrounding social digital libraries (p. 274). Case studies often focus on the cycle of research methods which inform each other through a longer, more detailed research process than using a single exploratory method. A case study approach fosters multiple

opportunities to revisit and reanalyze data collected earlier in the study, revise the research design as new facets and factors emerge, and combine multiple methods and data sources into a holistic description of each case. The research design used here, employing two qualitative and one quantitative method in a cycle (see section 3.3), follows this approach.

Yin (2003) breaks the process of conducting a case study into five phases. The phases "effectively force [the researcher] to begin constructing a preliminary theory" prior to data collection (p. 28), as done in Chapter 2. Each of Yin's five steps can be found in sections of this dissertation. First, one must determine the research questions to be asked; these were included in section 3.1 above. Second, one must identify what Yin calls the "propositions," statements "direct[ing] attention to something that should be examined within the scope of study" (p. 22). The theoretical framework developed earlier (see section 2.8) and the purpose of this research as stated in Chapter 1 provide this necessary focus from a conceptual perspective. The operationalization of this focus is discussed for each method in sections 3.4.4, 3.5.3, 3.6.4, and 3.7. Third, Yin says one must determine the unit of analysis, based on the research questions. In this study, the overall units of analysis are the two social digital libraries under consideration, LibraryThing and Goodreads; other units of interest include communities, groups, and individuals. The specific unit of analysis for each method of data collection is discussed in sections 3.4.1, 3.5.1, and 3.6.2. Fourth, one must connect "data to [theoretical] propositions," matching patterns with theories (p. 26). Using the theoretical framework developed in section 2.8 in data analysis (see sections 3.4.4, 3.5.6, 3.6.6, and 3.7) provides for this matching process. For the final step, Yin says one must determine "the criteria for interpreting [the] findings" (p. 27); the criteria chosen for this research are discussed in the data analysis sections (3.4.4, 3.5.6, 3.6.6, and 3.7) and are considered in light of concerns of validity, reliability, and trustworthiness (section 3.9) and the benefits (section 1.7 and Chapter 5) and limitations (section 5.6) of the study.

This research employed a multiple-case, "holistic" design at the highest level, focusing on LibraryThing and Goodreads as units, but what Yin (2003, p. 42) calls an "embedded" design, with multiple units of analysis considered in each method, at lower levels. Examining two social digital libraries allows them to be compared and contrasted, but commonalities were expected to emerge—and did—across the two cases to allow theoretical and practical conclusions to be drawn (see Chapter 5). Yin stated case study designs must be flexible and may change as a result

of research not turning out as expected, and subtle changes were made to what was intended to be a flexible plan for case studies of LibraryThing and Goodreads and their use as boundary objects within and across existing and emergent social and information worlds.

3.2.2. LibraryThing

LibraryThing (LT) is a social digital library and web site founded in August 2005 (LibraryThing, n.d.-a), with over 1.8 million members as of June 2014 (LibraryThing, 2014). It allows users to catalog books they own, have read, or want to read (LibraryThing, n.d.-b); these serve as Functional Requirements for Bibliographic Records (FRBR) items (International Federation of Library Associations and Institutions, 2009). Users can assign tags to books, mark their favorites, and create and share collections of books with others; these collections are searchable and sortable. LT suggests books to users based on the similarity of collections. Users can provide reviews, ratings, or other metadata (termed "Common Knowledge"; LibraryThing, 2013) for editions of books (FRBR's manifestations and expressions) and works (as in FRBR); this metadata and users' tags are shared across the site (LibraryThing, n.d.-c). LT provides groups (administered by users or staff), which include shared library collection searching, forums, and statistics on the books collected by members of the group (LibraryThing, n.d.-d). Discussions from these forums about individual books are included on each book's page, as are tags, ratings, and reviews. Each user has a profile page which links to their collections, tags, reviews, and ratings, and lists other user-provided information such as homepage, social networks used (Facebook, Twitter, etc.), and a short biography (LibraryThing, n.d.-c).

Examining LibraryThing in light of the definition of social digital libraries (see sections 1.1 and 2.4.3) shows the following:

- LT features one or more collections of digital content collected for its users, who can be considered a community as a whole and part of many smaller communities formed by the groups feature. This content includes book data and metadata sourced from Amazon.com and libraries using the Z39.50 protocol (LibraryThing, n.d.-b); and user-contributed data, metadata, and content in many forms: tags, favorites, collections, reviews, posts in discussions, and profile information.
- LT features services relating to the content and serving its user communities, including the ability to catalog books; create collections; discuss with others; and search for and browse books, reviews, tags, and other content.

- LT is managed by a formal organization and company, and draws on the resources of other formal organizations (Amazon.com, libraries) and informal groupings (LT users) for providing and managing content and services.

As a large social digital library and web site, open to the public and with multiple facets, LibraryThing is well-suited as a setting and case for examining the role of digital libraries within and across communities. The existing research literature on LibraryThing has focused on its roles for social tagging and classification (e.g. Chang, 2009; Lu, Park, & Hu, 2010; Zubiaga, Körner, & Strohmaier, 2011) and in recommendation and readers' advisory (e.g. Naughton & Lin, 2010; Stover, 2009). This study adds an additional view of the site as an online community and social digital library.

3.2.3. Goodreads

Goodreads (GR), similar to LibraryThing, is a social digital library and web site founded in January 2007 (Goodreads, 2014a). As of June 2014, it has 25 million members. Users can "recommend books" via ratings and reviews, "see which books [their] friends are reading; track the books [they are] reading, have read, and want to read; … find out if a book is a good fit for [them] from [the] community's reviews" (para. 2); and join discussion groups "to discuss literature" (Goodreads, 2014b, para. 11). As with LibraryThing, Goodreads users can create lists of books (called "shelves"), which act as site-wide tags anyone can search on (para. 5). Searching and sorting are possible for other metadata and content types; metadata can apply to editions (manifestations or expressions) of a book or to whole works (in FRBR terms; International Federation of Library Associations and Institutions, 2009). Groups can be created, joined, and moderated by users (including Goodreads staff); they can include group shelves, discussion forums, events, photos, videos, and polling features. Users have profile pages, which may include demographic information, favorite quotes, writing samples, and events. Users who have greater than 50 books on their shelves can apply to become a Goodreads *librarian*, which allows them to edit and update metadata for books and authors (Goodreads, 2012d, "What can librarians do?" section). In March 2013—during the early stages of this dissertation research—Amazon.com acquired Goodreads (Chandler, 2013).

Examining GR in light of the definition of social digital libraries (see sections 1.1 and 2.4.3) shows the following:

- GR features one or more collections of digital content collected for its users, who can be considered a community as a whole and part of many smaller communities formed by the groups feature. This content includes book data and metadata previously sourced from Ingram (a book wholesaler), libraries (via WorldCat and the catalogs of the American, British, and German national libraries), and publishers (Chandler, 2012), and now from Amazon since their purchase (Chandler, 2013); and user-contributed metadata and content, including shelves, lists, forum posts, events, photos, videos, polls, profile information, and book trivia.

- GR features services relating to the content and serve its user communities, including the ability to catalog books; create shelves; discuss with others; and search for and browse books, reviews, lists, and other content.

- GR is managed by a formal organization and company—Goodreads Inc., although now owned by Amazon—and draws on the resources of other formal organizations (Amazon, Ingram, OCLC via WorldCat, libraries, and publishers) and informal groupings (GR users, the *librarians* group) for providing and managing content and services.

As with LibraryThing, Goodreads is well-suited as a setting and case for examining the role of digital libraries within and across communities, because it is a large social digital library and web site that is open to the public and has multiple facets. There is little existing research literature on Goodreads, limited to its use in recommendation and readers' advisory (e.g. Naik, 2012; Stover, 2009) and examining its impact on the practice of reading (Nakamura, 2013). This study adds an additional view of the site as an online community and social digital library.

3.3. Research Design

Use of a mixed methods research design combines qualitative and quantitative methods together to emphasize their strengths; minimize their weaknesses; improve validity, reliability, and trustworthiness; and obtain a fuller understanding of uses of social digital libraries as boundary objects within and across social and information worlds. Definitions of mixed methods research vary but core characteristics can be identified, which Creswell and Plano Clark (2011, p. 5) summarize as

- collection and analysis of both qualitative and quantitative data;

- integration of the two forms of data at the same time, in sequence, or in an embedded design;

- prioritizing one or both forms of data;

- combining methods within a single study or multiple phases of a larger research program;

- framing the study, data collection, and analysis within philosophical, epistemological, and theoretical lenses; and

- conducting the study according to a specific research design meting the other criteria.

This study meets all of these criteria. Qualitative and quantitative data were collected and integrated in sequence; qualitative data was prioritized, but not at the expense of quantitative data collection; multiple methods were used within this one study; and the study was based on the theoretical framework developed and the tenets of social informatics and social constructionism explained in Chapter 2.

This study took a philosophical view of mixed methods research similar to the view of Ridenour and Newman (2008), who "reject[ed] the [standard] dichotomy" between qualitative and quantitative research methods, believing there to be an "interactive continuum" between the two (p. xi). They stated "both paradigms have their own contributions to building a knowledge base" (p. xii), suggesting a holistic approach to research design incorporating theory building and theory testing in a self-correcting cycle. Qualitative methods, Ridenour and Newman argued, should inform the research questions and purpose for quantitative phases, and vice versa; they termed this process an "interactive" one (p. xi). Research designs should come from the basis of "the research purpose and the research question" (p. 1), what "evidence [is] needed," and what epistemological stance should be taken "to address the question" (p. 18).

Greene (2007) presented a similar argument, stating "a mixed methods way of thinking actively engages with epistemological differences" (p. 27); multiple viewpoints are respected, understood, and applied within a given study. She acknowledged the tensions and contradictions that will exist in such thought, but believed this would produce the best "conversation" and allow the researcher to learn the most from their study and data (p. 27). Creswell and Plano Clark (2011) encompassed multiple viewpoints and potential designs in their chapter on choosing a mixed methods design (pp. 53-104). They considered six prototypical designs: (a) convergent

parallel; (b) explanatory sequential; (c) exploratory sequential; (d) embedded; (e) transformative; and (f) multiphase.

The research design for this dissertation study is a variation on a multiphase design incorporating elements of the explanatory sequential and exploratory sequential designs of Creswell and Plano Clark. Three methods were use for data collection, following the process proposed by Ridenour and Newman (2008) and taking the approach to thought suggested by these authors, Creswell and Plano Clark (2011), and Greene (2007). The selection of this design and these methods was based on the research purpose discussed in Chapter 1, the research questions introduced in section 3.1, and the research setting explained in section 3.2. The methods used were

- *content analysis* of messages in LibraryThing and Goodreads groups (section 3.4);
- a structured *survey* of LibraryThing and Goodreads users (section 3.5); and
- semi-structured qualitative *interviews* with users of LibraryThing and Goodreads (section 3.6).

The holistic combination of these methods, interrelated in a multiphase design, has allowed for exploratory and descriptive research on social digital libraries as boundary objects incorporating the strengths of quantitative and qualitative methods and the viewpoints of multiple perspectives.

3.3.1. Integrated Design

A sequential, multiphase research design was employed for two reasons. First, each of the methods above required focus on data collection and analysis by the researcher. Trying to use a parallel or concurrent design, conducting content analysis alongside a survey or a survey alongside interviews, could have caused excess strain; a sequential design improved the chances of success, the quality of data collected and analyzed, and the significance of and level of insight in the study's conclusions. Second, each method built on the methods before it. The design of the survey and interview instruments was influenced by ideas drawn from the literature and theories for the study and by elements of interest uncovered during the content analysis phase. The interviews focused on gathering further detail on and insight into findings from the survey results and the content analysis. This combination of methods allowed for exploring each case through content analysis, obtaining summary explanatory data through surveys, and then detailed descriptive and explanatory data through the interviews, achieving the benefits of both the

exploratory and explanatory research designs presented by Creswell and Plano Clark (2011, pp. 81–90).

Creswell and Plano Clark (2011) expressed caution, noting multiphase research designs often require substantial time, effort, and multi-researcher teams. The three phases used here were not lengthy or intensive enough to cause lengthy delays in the completion of this dissertation. This is one coherent dissertation study, instead of the long-term, multi-project research program Creswell and Plano Clark cite as the prototypical multiphase design. While it was known in advance this would not be the speediest dissertation research project, using a sequential design allowed for the results from each phase to emerge as the research proceeded, instead of having to wait for all phases to complete as in a concurrent design. A complete and insightful picture of the findings and conclusions of the dissertation came within a reasonable amount of time and with a good level of effort.

3.4. Content Analysis

Content analysis has been defined as "a technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2004a, p. 19), with emphasis often placed on "the content of communication" (Holsti, 1969, p. 2)—specific "characteristics of messages" (p. 14)—"as the basis of inference" (p. 2). Early forms of content analysis required objectivity and highly systematic procedures (see Holsti, 1969, pp. 3–5, 14). The form of content analysis used in this study considers the meaning and understanding of content to "emerge in the process of a researcher analyzing a text relative to a particular context" (Krippendorff, 2004a, p. 19), a subjective and less rigid approach. Such text or content may have multiple, socially constructed meanings, speaking to more "than the given texts" (p. 23); they are indicative of the "contexts, discourses, or purposes" surrounding the content (p. 24).

There are at least three categories of content analysis, which Ahuvia (2001) labels *traditional*, *interpretive*, and *reception-based*; other authors and researchers (e.g. Babbie, 2007, p. 325; Holsti, 1969, pp. 12–14) break content analysis into *latent* (subjective and qualitative) and *manifest* (objective and quantitative) categories of analysis. Early content analysis was purely objective and generated quantitative summaries and enumerations of manifest content, but qualitative and latent analysis have found greater acceptance over time (Ahuvia, 2001; Holsti, 1969, pp. 5–14; Krippendorff, 2004a). This study used the interpretive approach and focused

coding on the latent content—the underlying meaning—of the data gathered. This section discusses the application of content analysis in the first phase of this dissertation research, including (a) the choice of the unit of analysis; (b) the population and sampling method chosen; (c) the sampling and data collection procedures followed, including a pilot test; and (d) how the data was analyzed.

3.4.1. Unit of Analysis

The unit of analysis chosen for the content analysis in this study was the *message*. LibraryThing's and Goodreads' group discussion boards are organized into threads, each of which may contain multiple individual messages. Analysis of these individual messages was aimed at uncovering indications of the roles the two digital libraries play in existing and emergent social and information worlds. Analysis began with the individual messages to ensure details and phenomena at that level were captured, but over time went beyond individual messages to the thread or group levels, since these phenomena served as instantiations of social and information worlds or as sites for interaction and translation.

3.4.2. Population and Sampling

The broader population of messages could be defined as all messages posted in public LibraryThing and Goodreads groups, but the logistics of constructing a sampling frame for such a population were and are all but impossible; it is improbable the two sites would provide data on all messages posted if it is not required of them by law. Recent messages from active groups were of most interest and use for this study. The population of messages was defined as all messages from the most active LibraryThing groups in the past week (taken from http://www.librarything.com/groups/active) and the most recently active Goodreads groups (taken from http://www.goodreads.com/group/active) as of April 30, 2013, the day data collection began for the content analysis phase of the study. The sampling frames were restricted to as close to but no more than 100 groups as possible, based on LibraryThing's list claiming to list the 100 most active groups; the actual frames consisted of 91 LibraryThing groups and 93 Goodreads groups once duplicates were removed. During the planning and design of this study, Goodreads provided a list of "recently popular" groups (at http://www.goodreads.com/group/ recently_popular) that was akin to LibraryThing's list in nature; that list was taken down sometime in early 2013 due to it causing a server slowdown (Jack & Finley, 2013). Using the most recently active groups did not guarantee consistent popularity or activity over a recent time

period (such as a week), but did address the need to collect recent messages from active groups and was deemed the most acceptable source for a sampling frame still available.

To obtain a sample of messages from this population, a stratified random sampling method using the levels of group, thread, and message was employed. From the lists identified above, five groups were selected at random from each digital library (for a total of ten), but with the following inclusion and exclusion criteria applied to help ensure representativeness and allow for meaningful analysis:

(a) At least one group from each digital library with over 100 messages posted in the last week was selected.

(b) At least one group from each digital library with under 100 messages posted in the last week was selected.

(c) Any group with fewer than 60 messages total was removed and a new group selected.

(d) Any group with fewer than two members was removed and a new group selected.

(e) Any group used in the pilot study (see below) was removed and a new group selected.

Due to constraints placed on this research by Goodreads and the nature of this digital library, all group selections for Goodreads required approval from at least one group moderator per group. Prior to the collection of any data, such moderators were messaged via the site using the invitation letter found in Appendix A, section A.1.1, and provided their consent for their group to be included in the research by agreeing to an informed consent statement (see Appendix A, section A.1.2). Any groups for which the moderator did not provide consent within two weeks were removed from the sample and a new group selected, using the same procedures and initial list of groups.

Two additional groups, one from LibraryThing and one from Goodreads, were used for a pilot study of the content analysis procedures, selected at random using the same procedure as above but with only criteria (c) and (d) applied. As with the main sample, the moderator for the Goodreads group selected was contacted to obtain his approval and consent prior to data collection; the moderator of the first group did not respond within two weeks, so a new group was selected. These two groups were selected in December 2012, earlier than the main sample, using the two lists of groups as they were at that time. For the pilot, threads were selected systematically and at random from the threads shown on the group's front page (i.e. the most recent and active threads) until the total messages per group reached between 50 and 60; in both

cases only one thread was selected containing 60 messages. Any thread with fewer than two messages was to be excluded from selection. All messages in the selected threads, up to the 60-message limit, were part of the sample for the pilot test, which totaled 120 messages. At 20% the size of the intended sample for the main content analysis phase, the pilot sample provided sufficient data to assess if the proposed procedures were appropriate and how long this phase of the study would take. The pilot study allowed adjustments to be made for the main content analysis phase, based on problems and difficulties observed.

For the main content analysis phase, the ten groups were selected on April 30, 2013, a later date than the two for the pilot test, using the two lists of groups as they were as of that day. A few weeks later, threads were systematically selected at random from the threads shown on each group's front page (i.e. the most recent and active threads) until the total messages per group reaches between 50 and 60. As with the pilot, any thread with fewer than two messages was excluded from selection. No more than the first 20 messages in each thread selected were part of the sample, a change from the pilot test made to ensure at least three threads per group were selected and improve the representativeness of the sample. This was intended to lead to a total sample of between 500 and 600 messages, about half from LibraryThing and half from Goodreads. The samples in practice consisted of 286 messages from LibraryThing and 233 from Goodreads, for a total of 519 messages (see also Chapter 4, section 4.1). For all random and systematic sampling in the pilot and main data collection stages, the starting point and interval was chosen by generating random numbers using Microsoft Excel's RANDBETWEEN function.

This stratified random sampling procedure was chosen to encourage representativeness of the resulting sample while ensuring data allowing for meaningful analysis was selected. Messages, threads, or groups could be selected purposively, but such a method could result in a sample biased towards a given type of message, thread, or group. Random sampling of groups and threads from the population deemed useful for analysis produced a sample of messages from LibraryThing and Goodreads that can be judged to be quite representative, if not quite equivalent to one generated from simple random sampling since the sampling frames did not include the entire population of groups. The sizes of the sample at each stratum were chosen to balance representativeness against the time and resources necessary to complete content analysis.

3.4.3. Data Collection Procedures

Messages were collected by using a Web browser to access the LibraryThing and Goodreads web sites, following the sampling procedures discussed above. Once a thread was displayed on the screen, up to 20 messages from the thread—starting with the earliest messages—were copied and pasted into a Microsoft Word document; one such file was maintained per thread. As found in the digital libraries, each message's author, date/time posted, and message content was saved to that file. Images or other media included were saved in their original context as best as possible. Members' identities, as indicated by their usernames, were used to allow for identifying common message authors in a thread, for analysis of the flow of conversation, and for identifying potential participants for later phases of the study. Identities remained confidential and were not be part of further analysis, results, or publications; psuedonyms are used in this dissertation (see section 4.1). Avatars from Goodreads were discarded, as members' usernames were sufficient for this purpose. These documents were stored as discussed in section 3.8 on data management.

3.4.4. Data Analysis

For analysis, the documents were imported into NVivo qualitative analysis software, version 10, running on a MacBook Pro via a virtualized Windows 7 installation. Each message was examined and codes were assigned based on its latent meaning and interpretation. The codes to be assigned drew from boundary object theory, the social worlds perspective, and the theory of information worlds, which served as an interpretive and theoretical framework for the content analysis (cf. Ahuvia, 2001). These codes were common to multiple phases of this study, and can be found in section 3.7 below. So-called "open" codes, not included in the list but judged by the researcher to be emergent in the data and relevant to the study's purpose and research questions, could be assigned during the content analysis and coding process, as recommended by Ahuvia (2001) for interpretive content analyses and others for general qualitative data analysis (e.g. Charmaz, 2006). Findings from the data as coded and analyzed, including open codes, are included in Chapter 4, section 4.1.

3.4.4.1. Pilot test. These coding and analysis procedures were piloted first, using data from two of the groups, prior to their use in the main content analysis phase. Two volunteer

coders, doctoral students at the FSU School of Information[2], applied the coding scheme and procedures developed for analyzing qualitative data in this study, presented in greater detail in section 3.7 below. The researcher applied the same scheme and procedures. Measures were in place to ensure the validity, reliability, and trustworthiness of the data and analysis, as discussed in section 3.9 below. Both intercoder reliability statistics and holistic, qualitative analysis of the results were used to clarify the scheme and procedures after each round of coding. Changes that were made to procedures and the coding scheme, and issues encountered with intercoder reliability statistics, are discussed at length in section 3.7 below.

3.5. Survey

Surveys are a common research method in the social sciences, including library and information science. They allow characteristics of a population to be estimated, via statistics, through analysis of the quantified responses given to questions by a small sample of the population (Fowler, 2002; Hank, Jordan, & Wildemuth, 2009; Sapsford, 1999). Surveys consist of "a set of items, formulated as statements or questions, used to generate a response to each stated item" (Hank et al., 2009, p. 257). The data collected may describe the beliefs, opinions, attitudes, or behaviors of participants on varied topics, although most research surveys have a special purpose and focus (Fowler, 2002). This is true in the case of the survey used here, which focused on obtaining data on uses of LibraryThing and Goodreads by a sample of its users, in the specific context of their usage as boundary objects within and across social and information worlds.

The following sections cover the components of survey research methods cited by Fowler (2002, pp. 4–8) and Hank et al. (2009) as they apply to the survey used in this study. These include discussion of the unit of analysis, population, and sampling (sections 3.5.1 and 3.5.2); concept operationalization and survey question design (sections 3.5.3 and 3.5.4); pretesting and data collection (section 3.5.5); and data analysis (section 3.5.6). The survey was designed as a

---

[2] The FSU iSchool was known at the time as the School of Library and Information Studies; for simplicity the newer name (which took effect in early 2014) will be used to refer to this entity in this dissertation. The older name is still present on the invitation letters and consent forms as approved by FSU's Human Subjects Committee in Appendix A.

coherent whole—as recommended by Fowler (2002, p. 7)—and in relation to the content analysis and interview methods used in other phases of the study.

3.5.1. Unit of Analysis

For the survey phase of this dissertation study, the unit of analysis was the individual LibraryThing or Goodreads *user*. These users were—and are—understood to be members of one or more communities, social worlds, or information worlds, and to be members of or frequent one or more LibraryThing or Goodreads groups. Analysis of their responses to questions about these groups and other communities they were part of allowed for greater understanding of the roles the digital library plays for them in context of these worlds. Tentative conclusions could be made about the nine groups from which users were surveyed and about the communities associated with these groups, but generalization to LibraryThing and Goodreads as a whole was not possible, as explained in section 3.5.2 below.

3.5.2. Population and Sampling

The broader population of LibraryThing and Goodreads users totals over 26 million people, and the logistics of constructing anything resembling a sampling frame—i.e. a complete list of all users of the two sites—are all but impossible. Given the focus in the content analysis phase on nine groups (five from LibraryThing, four from Goodreads), narrowing the population to include any user who visits, frequents, or is a member of one or more of these groups made the task of sampling possible and the population compatible with the population of messages used in the content analysis phase. This narrowing of population led to a less representative population than that of all LibraryThing and Goodreads users, limiting the kinds of analysis that could be done of the survey (further details below and in Chapter 4, section 4.2).

Two sampling methods were used to select potential survey participants from this population:

1. A purposive sample, consisting of all LibraryThing users who posted a message within the five LibraryThing groups selected for the content analysis phase. The pool of messages included the messages selected for the main sample in the content analysis phase. (Goodreads did not consent to messaging of Goodreads users for this purpose, so Goodreads users were excluded from this sample.)

2. A convenience sample, consisting of all LibraryThing and Goodreads users who responded to an invitation to participate posted to each of the nine groups selected for the content analysis phase (procedures detailed in section 3.5.5 below).

All users who met the criteria (having posted a message or responded to the invitation) and human subjects requirements for age (between 18 and 65) were allowed to participate, helping to increase the responses collected and the representativeness (as best as possible) of the results obtained.

A true random sample, even from the narrower population, could not be drawn because the researcher could not generate a complete list of visitors to and members of the selected groups. Obtaining such a list from LibraryThing and Goodreads—or the group moderators, should they have access to one for their group—would have placed an unreasonable burden on the digital libraries and could have jeopardized their cooperation in and the successful completion of this study. Such a list would have violated the privacy rights of the members of these groups. A random element is included in the sampling process by using the random groups selected during the content analysis phase, but the sample still lacks much of the representativeness of a true random sample. Users could choose to participate or not and not all users of the nine groups were guaranteed to see the invitation, making it impossible to infer beyond the sample due to selection bias. One may assume survey respondents are at least moderately representative of the population of users of the nine LibraryThing and Goodreads groups, and so conclusions can be inferred about those users through nonparametric statistics. Further details are given in Chapter 4, section 4.2.

3.5.3. Operationalization of Concepts and Instrument Design

The phenomena of interest for the survey were similar to the phenomena of interest in the content analysis and interview phases of the study: the concepts of boundary objects, translation, coherence, information worlds, social norms, social types, information values, information behaviors or activities, social worlds, organizations, sites, and technologies. Conceptual definitions for these are found in boundary object theory, the social world perspective, the theory of information worlds, and the synthesized theoretical framework for social digital libraries (see Chapter 2). For the purposes of the survey and in the context of answering the research questions of this study, these concepts were operationalized through a set of Likert scaled questions (Brill, 2008; McIver & Carmines, 1981), adapted from the conceptual definitions found in the literature,

theories, and synthesis thereof. These questions can be found as part of the survey instrument in Appendix B, section B.1.

Four to six Likert items (Brill, 2008; McIver & Carmines, 1981) for each of the concepts and phenomena of interest were included in the survey. A symmetric five-point scale was used for each item, as is traditional for Likert items (Brill, 2008); five response choices provides for higher levels of reliability without offering respondents too many choices (Brill, 2008), and questions can be re-scaled without significant loss of statistical validity (Dawes, 2008). Each item used the following labels for response choices: Strongly Agree(5), Agree, Neutral, Disagree, and Strongly Disagree(1). In analysis, each of the items was assigned a numeric rating (5-1) and summed to form Likert scales for each phenomenon (Brill, 2008; McIver & Carmines, 1981). Statistical analysis checked the internal consistency and reliability of each scale, with items dropped that contributed to lower levels of reliability (see sections 3.5.5 and 3.9 below, and Chapter 4, section 4.2.1). Using at least four items per scale allowed for appropriate statistical analysis to proceed.

Questions were developed, based on the literature and theoretical framework reviewed in Chapter 2, to measure each of the phenomena of interest. Hank et al. (2009, pp. 257–258) provided a list of suggestions for constructing survey instruments and writing questions: ensure questions are answerable, stated in complete sentences, use neutral and unbiased language, are at an appropriate level of specificity, and are not double-barreled. They suggested participants should not be forced to answer any one question. Fowler (2002, pp. 76–103) included a chapter on designing questions that are good measures in his book on survey research methods. He cautioned researchers to be careful questions are worded adequately; mean the same to and can be understood by all respondents; can be answered given the respondents' knowledge and memory; and do not make respondents feel uncomfortable and desire not to give a true, accurate answer. According to Fowler, researchers should not ask two questions at once. Sapsford (1999, pp. 119–122) agreed and suggested care should be taken to ensure questions are precise, lack ambiguity, and are easy to understand and in colloquial language. The questions developed for the survey in this study, found in Appendix B, section B.1, were developed by the researcher and reviewed by the researcher and his supervisory committee in light of this advice.

An additional set of demographic and usage questions was part of the survey instrument, in a separate section at the end as recommended by Peterson (2000, as cited in Hank et al., 2009,

p. 258). These questions allowed for collection of data on other variables of potential relevance to and having possible impact on the phenomena of interest, including use of the Internet, LibraryThing and Goodreads, the groups feature of the sites, and other social media and social networking web sites; and demographic factors such as age and gender. These demographic questions can be found in Appendix B, section B.1.

3.5.4. Data Collection Procedures

3.5.4.1. Pretest. The first stage of data collection was to pretest the survey instrument to help ensure its reliability and validity (Hank et al., 2009, p. 259). A convenience sample of graduate students and graduate alumni of Florida State University was invited to pretest the survey and answer a few short, open-ended questions about their experience. Recruitment took place via face-to-face discussion, e-mail, and Facebook messages. All pretesters came from the School of Information; initial attempts were made to have this sample represent multiple departments from the university, but no students from other departments contacted (Business and Communication) volunteered. Flyers were posted later in the pretest period and the survey opened up via a direct link, to see if undergraduate or graduate students from other departments would be interested, but no responses were received through the link. One School of Information faculty member did volunteer his time to pretest the survey, and his input was welcomed alongside the students. Minor changes were made as a result, reducing the number of questions slightly to reduce perceived repetitiveness and clarifying other questions that pretesters reported getting stuck on. The pretest helped confirm the length of time for completion of the survey.

3.5.4.2. Main survey. The second stage of data collection was to select the samples discussed in section 3.5.2 and send invitations to participate to them. A couple of weeks before this began, the researcher contacted LibraryThing and the moderators of each Goodreads group to inform them of the beginning of the survey. A staff member from LibraryThing posted a short message in each group to let users know that the research would be taking place and had been given LibraryThing's approval, to ensure invitations were not seen as spam. (LibraryThing required this step as part of their approval of the research; see Appendix E, section E.1.) Goodreads moderators were welcome to inform their groups of the upcoming research.

The purposive sample was drawn from LibraryThing users who posted messages collected during the content analysis phase. Each of these users was sent an invitation letter, included in Appendix A, section A.2.1.1. The private message features of LibraryThing were

used to send the invitations to the selected users; while LibraryThing users can include an e-mail address in their profile, not all did so. Reminder invitation letters (Appendix C, section A.2.1.2) were re-sent two weeks and four weeks after the beginning of data collection to remind individuals who had not completed the survey and thanking users who had. The convenience sample was drawn by posting an invitation, included in Appendix A section A.2.2, to each of the LibraryThing and Goodreads groups selected during the content analysis phase. This invitation was re-posted to the same groups two weeks and four weeks after the beginning of data collection, to help ensure as many group members and visitors as possible saw it and had a chance to respond. Permission was granted by LibraryThing and Goodreads staff for this method of data collection (see Appendix E, sections E.1 and E.2).

Participants were given a total of six weeks to complete the survey from August 26th, 2013, the date data collection first began for this phase of the study. The survey was expected to take users about 15 to 20 minutes, an estimate confirmed by the pretesters—with more subject knowledge—taking between 7 and 16 minutes. The reminders at two and four weeks, number of visitors to and members of the nine groups, and number of users directly invited on LibraryThing led to sufficient data for analysis (see Chapter 4, section 4.2), although snowball sampling and other techniques were held in reserve in case they were necessary.

3.5.4.3. Compensation. To encourage participation, compensation was offered in the form of a drawing for one of ten $25 Amazon.com, Barnes and Noble, or Books-A-Million gift cards. These stores were selected since they include the most popular online bookstore—Amazon.com, who after this selection was made acquired Goodreads—and the two most popular brick-and-mortar bookstores (which also have an online presence). Participants were given a choice of which store they would prefer, increasing the potential usefulness of the gift card to them and reducing potential bias created by supporting only one store. Other bookstores are smaller, do not offer online gift cards, or have few locations; offering gift cards from every possible store would present logistical challenges. The e-mail addresses of all participants who completed the survey and included an e-mail address in their response were entered into a Microsoft Excel spreadsheet (maintained under the data management procedures detailed in section 3.8). Gift card codes were e-mailed to 10 random e-mail addresses—selected by using Excel's RANDBETWEEN function to generate 10 random numbers between 1 and the number of users who took the survey, then selecting those users from the spreadsheet—for the store they

selected as preferred; these were sent on November 9th, about one month after the survey was closed. Funds for the gift cards came from a Beta Phi Mu Eugene Garfield Doctoral Dissertation Fellowship, which I acknowledge and am thankful for.

3.5.4.4. Online hosting. The survey instrument was hosted online using Qualtrics online survey software, made available by FSU to all students and faculty. An online, Internet-based survey provided the greatest chance of reaching users of LibraryThing and Goodreads in the context of their use of the site and their interactions with other users. It cost less—survey hosting for a questionnaire of any length is provided free by Qualtrics in association with FSU—and took less time than a self-administered paper survey was expected to, while providing for honest answers and requiring less direct researcher involvement compared with an administered paper or telephone survey (Fowler, 2002, pp. 71–74). Participants completed the survey by following a link in the invitation letters; two separate links were used for users of LibraryThing and Goodreads, so that the survey could be personalized to refer to each digital library by name.

3.5.4.5. Consent and follow-up. The first page of the survey included an informed consent statement, included in Appendix A, section A.2.3, which participants had to agree to before they could begin answering the survey questions. As seen by the last few questions in Appendix B section B.1, participants were asked for their e-mail address for purposes of compensation, if they were interested in participating in a follow-up interview, and if they desired a report of the findings of the research once the study was complete. These e-mail addresses are being kept confidential and are stored in a secure, password-protected encrypted volume, the password known to the researcher but no one else. Details of data management are discussed in section 3.8.

3.5.5. Data Analysis

The survey results were analyzed using SPSS statistical analysis software running on Windows, accessed through a virtual lab environment supported by FSU. First, the Likert scales were analyzed to determine the internal consistency and reliability of the scales via Cronbach's alpha, following the procedures related by George and Mallery (2010). Individual items were dropped from a scale if their removal would increase the Cronbach's alpha (and the reliability) of the overall scale. This procedure and its results are detailed in Chapter 4, section 4.2.1. The average of the remaining items in the scale was then taken, resulting in one value ranging from one to five for each of the concepts being measured. Combined with the demographic variables

collected in the second half of the study, these were analyzed using appropriate, mostly nonparametric statistics including chi-square analysis, Mann-Whitney U tests, median tests, Kruskal-Wallis tests, Wilcoxon signed rank tests, and Kendall's τ correlations (see Chapter 4, section 4.2 for details).

3.6. Interviews

Qualitative interviewing, used in the third phase of this study, is a descriptive and interpretive research method that seeks meaning (Kvale & Brinkmann, 2009). While interviewers may seek basic facts, explanations, and statistics, nuanced explorations and descriptions of phenomena are of core interest. Interviews in qualitative and mixed-methods research projects are used "to understand themes of the lived daily world from the [participants'] own perspectives" (p. 24), through researcher interpretation of "the meaning of the described phenomena" (p. 27). Interviews for research purposes are often seen as a form of "professional conversation" (p. 2; see also Lincoln & Guba, 1985a, p. 268; Sutton, 2010, p. 4388) between the interviewer and the interviewee, on given themes introduced by the interviewer but assumed to be of mutual interest to the interviewee. The two "act in relation to each other and reciprocally influence each other" (Kvale & Brinkmann, 2009, p. 32). Interviewees choose specific instances, examples, or areas within the chosen theme(s) to discuss with the interviewer.

Interviews serve as a source of data on phenomena from the past, present, or (potential) future of interviewees, including "persons, events, activities, organizations, feelings, motivations, claims, concerns, … other entities" (Lincoln & Guba, 1985a, p. 268), and the complex interrelations between all of these. Interviews can help to verify ("member check"), extend, and triangulate data and information already obtained via other methods (Creswell & Plano Clark, 2011; Lincoln & Guba, 1985a). They allow for the gathering of research data when the researcher or his/her colleagues cannot conduct an ethnographic participant observation due to time, location, language, or other constraints (Sutton, 2010).

This dissertation study used semi-structured qualitative interviews employing the critical incident technique (Fisher & Oulton, 1999; Flanagan, 1954; Woolsey, 1986) to explore and describe the phenomena surrounding the roles of LibraryThing and Goodreads, as boundary objects, within and across social and information worlds. Interviews helped find nuances and details that were not possible to determine through the survey questionnaire and were missed, glossed over, or not observable during content analysis. The following sections discuss the

strengths of interviews for this study, the chosen unit of analysis, population and sampling procedures, design of the interview instrument, procedures used for conducting the interviews, and data analysis.

3.6.1. Strengths of Interviews

The strengths of qualitative interviews are a good fit with the framework and perspective taken in this dissertation. These strengths are evidenced by many of the studies of social digital libraries reviewed in Chapter 2 using interviews (Bishop, 1999; Bishop et al., 2000; Chu, 2008; Farrell et al., 2009; Marchionini et al., 2003; Star et al., 2003; Van House, 2003; You, 2010) and the frequent use of interviews in studies of social and information worlds and of boundary objects (see Burnett, Burnett, et al., 2009; Burnett, Subramaniam, et al., 2009; Chatman, 1992; Clarke & Star, 2008; Gal et al., 2004; Gibson, 2011, 2013; Kazmer & Haythornthwaite, 2001). Thick, nuanced description of meanings, close to users' thoughts (Forsythe, 2001; Geertz, 1973; Kvale & Brinkmann, 2009), was intended to help expose the social construction of these meanings and of the phenomena of social and information worlds, which happened (see Chapter 4, section 4.3). Since true ethnographic observation would be difficult to arrange and could miss the social elements of interest, qualitative interviews were the best choice for returning rich, descriptive data on participants' social and information worlds and the roles LibraryThing and Goodreads play in them. The qualitative interviewing literature states that its flexibility as a technique addresses the different contexts interviewees—with varying interests and backgrounds—come from, allowing the interviewer to adjust (Kvale & Brinkmann, 2009; Westbrook, 1997); this was true in practice in this case. The development of rapport can build opportunities for future follow-up, longitudinal research with the same participants, exploring the results of this study in greater detail (Westbrook, 1997). The understanding of participants of the roles of LibraryThing and Goodreads in the social and information worlds they are part of is at the core of this study, and the obtaining of descriptions and perspectives of participants' "lived worlds" and their "understanding of the meanings in their lived world" was an appropriate use of interviews and played to their strengths (Kvale & Brinkmann, 2009, p. 116).

3.6.2. Unit of Analysis

The unit of analysis chosen for the interview phase of the study was the individual *user* of LibraryThing or Goodreads. These users were understood, as in the survey phase, to be part of one or more social or information worlds, and their participation in and responses to the

interview informed analysis of the roles of LibraryThing and Goodreads in their experiences, in these existing worlds, and in the potential emergence of new worlds. As discussed above and in Chapter 2, while individuals were interviewed the theoretical framework underlying this proposed study allowed for multi-leveled analysis, taking advantage of the strengths of interviews over other methods while minimizing their weaknesses.

3.6.3. Population and Sampling

The broader population of LibraryThing and Goodreads users totals over 26 million people; as with the survey phase of the study, sampling from this large population would present major logistical challenges. Given the existing sample of users selected to take the survey, restricting the sample of potential interview participants to this subgroup of the population—a ready-made sampling frame—provides a manageable task, if perhaps not anything approaching a true random sample. This method of sampling is appropriate in this case since data is available from the survey about these users, their social and information worlds, and the roles LibraryThing and Goodreads may play in them, leading to more insightful interview data.

The interview phase used purposive sampling of users whose survey responses indicated they could provide insightful data on the roles of LibraryThing and Goodreads in existing and emergent social and information worlds. Determination of this indication was done by looking at the content analysis and survey findings and prioritizing which scores on which variables were most of interest. Users who indicated they would be willing to participate in follow-up research served as the sampling frame, from which participants were sampled and chosen with an eye towards obtaining thick description (Geertz, 1973) of the picture of the phenomena under study, given other constraints such as time and availability. As interviews continued towards saturation, these criteria were reviewed and revised, and ensuring that interviewees were at least moderately representative of the group of survey participants became a concern. True and complete representativeness is not necessary when using qualitative interviewing, but saturation of findings is a necessary requirement (Bauer & Aarts, 2000; Gaskell & Bauer, 2000; Westbrook, 1997), and so sampling continued "until further exemplars"—interviewees in this study— "fail[ed] to add new nuances or to contradict what is understood" from the existing collected data (Westbrook, 1997, p. 147). This sampling method was chosen to obtain data to answer the research questions—from the interviews and in combination with findings from the other two methods—and to provide an accurate representation of LibraryThing and Goodreads in the

context of the communities of users from the nine groups selected at the beginning of the content analysis phase.

Participants who were selected due to expectations they would provide insightful data through an interview were invited to take part via the e-mail addresses they provided when confirming their willingness to participate in an interview. The letter prospective interviewees were sent is in Appendix A, section A.3.1. An initial sample of six prospective interviewees—three from each digital library—was e-mailed at first, to allow interviews to be arranged within a week or two of the contact date and not be forgotten about by participants if scheduled too far in advance. Further prospective participants were invited every week or two thereafter, when necessary to increase the sample size. If and when selected users did not respond to the initial request, a second request was made one to two weeks later, except in the cases at the end of the interview data collection when saturation had been reached. New users replaced the original ones in the sample if the latter did not respond after two to three weeks.

3.6.3.1. Pretest. Prior to collection of actual interview data, the interview instrument and procedures (as discussed in the next two sections) were pretested with an additional convenience sample of two FSU School of Information alumni and one FSU School of Information faculty member who helped pretest the survey. The procedures for this were identical to the procedures discussed below for the main interview phase. Pretesting allowed for potential refinement of the instrument and procedures, ensuring questions are understandable by a broader population, and making any necessary adjustments to the sampling method for the main interviewing process. No transcriptions or data analysis from this pretest took place, and audio recordings that were made to test procedures were only used to refine the interview instrument and procedures; they were deleted once the main interviews began. No specific changes were made to the instrument, although the potential need for additional prompting in association with a few questions was observed; quirks and foibles of the recording software were discovered, leading to tighter and more careful following of recording steps for the main set of interviews.

3.6.4. Instrument Design

The interviews were semi-structured; they used an instrument as a guide, but were treated as a conversation guided by the interviewer's questions and the interviewees' personal responses and reflections (Kvale & Brinkmann, 2009; Lincoln & Guba, 1985a). The instrument, included in Appendix C, provided pre-planned questions and themes, but additional follow-up questions

and prompts not included in the instrument emerged from the conversation and its natural progression. This allowed key themes related to the research questions to be discussed and focused on without restricting the interview to no more than a given set of questions in advance (cf. Suchman & Jordan, 1990).

Key themes explored in the interviews included

- participants' use of LibraryThing or Goodreads, focusing on use as a boundary object;
- the social and information worlds of participants, and their relationship to LibraryThing or Goodreads;
- the characteristics of these social and information worlds—their social norms, social types, information values, information behaviors, activities, organizations, sites, and technologies—and their impact on the user and their use of LibraryThing or Goodreads;
- translation between, coherence across, and convergence of social and information worlds, via LibraryThing or Goodreads; and
- the emergence of new social or information worlds through translation, convergence, or related activities and behaviors of LibraryThing or Goodreads users.

Focusing on critical incidents (Fisher & Oulton, 1999; Flanagan, 1954; Woolsey, 1986) of times when users interacted with others using the LibraryThing or Goodreads digital libraries helped provide a rich environment and context for exploration of these themes in detail with each interviewee. Among the interviews the degree of focus by individuals on the critical incident versus the broader spectrum of their use varied, but this was accepted as a natural, emergent element of the interviews, and follow-up questions and prompts were used to ensure sufficient data was elucidated on the incidents. The questions included in the instrument and in prompts and follow-ups used drew from the advice set down by Kvale and Brinkmann (2009, pp. 130–140) in their discussion of scripting interviews and types of interview questions, including

- introducing themes before asking detailed questions;
- focusing on descriptions of *what* occurred and *how* during critical incidents, instead of *why* it happened (at least to begin with);
- following up on responses as appropriate;

- seeking projection of interviewees' opinions or the opinions of others in their social and information worlds; and

- checking the researcher's interpretation of previous findings and interview responses.

3.6.5. Data Collection Procedures

As mentioned above, prior to collection of actual interview data the interview instrument and procedures was pretested with two FSU iSchool graduate alumni and one FSU iSchool faculty member.

3.6.5.1. Preparation and recording. After participants agreed to be interviewed by replying to the invitation discussed in section 3.6.3, a specific date and time was arranged for the interview to take place. Since no participants were at locations close to Tallahassee (and few were expected to be), face-to-face interviews would have been difficult to accomplish. For this reason, it was planned that interviews would take place using online audiovisual media, as popular in studies of "Internet-based activity ... where the research participants are already comfortable with online interactions" (Kazmer & Xie, 2008, pp. 257–258). Interviewees were offered a choice of Skype (skype.com), Google Hangouts (accessible via plus.google.com), Apple FaceTime (apple.com), or telephone. Interviews were audio recorded, with interviewee permission; GarageBand (apple.com/ilife/garageband) and Soundflower (cycling74.com/products/soundflower) software were used to record Skype and Apple FaceTime calls, while telephone calls were recorded via Google Hangouts, Google Voice (voice.google.com), GarageBand, and Soundflower software. No users chose Google Hangouts, and more than expected chose telephone calls; while online audiovisual media were the intended plan, interviewees' preferences were attended to, and this did not cause any major issues with collecting interview data.

The interviewer took any notes he felt necessary on his impressions of the interview as soon as the interview has concluded, to not distract the interviewee with note taking but help ensure an accurate capturing of the interview process. Most interviews took between 40 and 55 minutes; full details are given in Chapter 4, section 4.3. These interview procedures allowed for a level of data equivalent to or greater than face-to-face interviews to be gathered, eliminating any potential weaknesses from a non-traditional interview setting while maintaining the strengths of synchronous interviews (Kazmer & Xie, 2008).

3.6.5.2. Introduction and informed consent. The interview process began with introductions, thanking the interviewees for participating, explaining the logistics of the interview, and ensuring that informed consent was obtained. Since obtaining written consent in person was not possible, participants were e-mailed a link to a page (the content for which is shown in Appendix A, section A.3.2) requesting their consent for the interviews, including the interview informed consent form, a couple of days before the interview. (This used the same FSU-partnered Qualtrics system as for the survey.) I requested interviewees to review this page and ask any questions they had. Before the interview recording began, consenting participants clicked an "I consent" button at the bottom of the page; some did this before audio or video contact was made, others waited until I directed them there just before the interview began. I then reviewed "the nature and purpose of the interview" with the interviewee, to ensure they knew the overall theme and topic of discussion (Lincoln & Guba, 1985a, p. 270). Prior to the critical incident portion of the interview, I asked a general, "grand tour"-type question (with follow-up prompts as necessary) to explore participants' use of LibraryThing or Goodreads, the reasons for this use, and the groups they participate in.

3.6.5.3. Critical incident technique. The biggest portion of the interview employed the critical incident technique, a flexible interviewing technique intended to obtain "certain important facts concerning behavior in defined situations" (Flanagan, 1954, p. 335). First developed for use in aviation psychology, it has become a popular interviewing technique in the social sciences, education, and business, including LIS (Butterfield, Borgen, Amundson, & Maglio, 2005; Fisher & Oulton, 1999; Urquhart et al., 2003; Woolsey, 1986). It is often used in exploratory research to build theories, models, or frameworks for later testing and refinement, as typified by Savolainen's (1995) research establishing his Everyday Life Information Seeking (ELIS) model. Flanagan (1954) outlined five main stages in the technique. The first two stages are to provide further operational definitions and structure for interviews, which have been discussed in the sections above. The fourth and fifth, procedures for analysis and interpretation of data gathered from interviews, are discussed in sections 3.6.6 and 3.7 below.

The third stage is the actual collection of a critical incident from each interviewee. In a critical incident interview, after initial introductions and formalities, the interviewer asks the interviewee to recall an incident where given situation(s) or behavior(s) occurred, as defined during the previous stages. Per Flanagan (1954), these incidents should be recent enough to

ensure participants have not forgotten the details of them. Specific language is used to get interviewees to think of such an incident. In this study, the following language was used, with slight changes incorporated in the context of a given interview:

> Now I'd like you to think of a time within the past few weeks where you interacted with others, either people you already knew or people you did not know, while using [LibraryThing / Goodreads]. *(Pause until such an incident is in mind, or gently prompt the interviewee if they have trouble recollecting one.)* Could you tell me about this interaction and how it came about?

This initial question allowed interviewees to refresh their memory of the incident by going over it in their mind, and provided data on their overall impressions of the interaction and how it came about. After this initial discussion, I guided the conversation with gentle prompts and follow-up questions designed to steer the conversation about the incident to the themes mentioned in section 3.6.4 above. Main questions were included in the interview instrument (see Appendix C); prompts were not. All questions and prompts were aimed at eliciting "the beliefs, opinions, ... suggestions ... thoughts, feelings, and [reasons] why participants behaved" that way during their interaction (Butterfield et al., 2005, p. 490), in the context of LibraryThing or Goodreads and the social and information worlds at play in the incident.

3.6.5.4. Finishing up. Once the critical incident had been explored at length, the interview concluded with final questions intended to help validate and generalize the findings obtained from the critical incident portion of the interview, a process often called "member checking" (Lincoln & Guba, 1985a). I gave an overall impression of the role or roles I felt LibraryThing or Goodreads played in the incident and in the interviewee's overall use of the site, and would ask if the impression seemed correct to the interviewee or—if they responded before I could get to that part—engaged them in further reflective conversation. Interviews confirmed if the incidents participants shared matched their overall experiences. The interview concluded by me thanking interviewees for their time and participation, and answering any questions they had (as a couple did about where the research was going or when they would hear about the overall findings). As mentioned above, as soon as the interview was over I took time to write up any notes I felt were necessary, to capture any elements of the experience that risked being lost due to fading memory. Interviewees were then thanked again for their participation and help via e-mail follow-ups a few days to a week later.

3.6.6. Data Analysis

All interview audio was transcribed by the researcher, who used Audacity software (audacity.sourceforge.net) to play back the interview and Microsoft Word to enter the transcription. Parts found to be difficult to understand could be slowed down or amplified in volume using the built-in features of the Audacity software; it provided noise reduction features that were helpful for one or two interview recordings. Any notes taken not already in digital form were transcribed. All notes, audio, and transcriptions were stored as discussed in section 3.8.

Data analysis proceeded in a similar fashion to the content analysis phase of the study. Transcripts and notes were imported into NVivo 10 qualitative analysis software, which was used to look over each file and assign codes to sentences and passages. As with the earlier qualitative method, the codes assigned draw from boundary object theory, the social worlds perspective, and the theory of information worlds, which served as an interpretive and theoretical framework for analyzing the meaning of interview responses. They can be found in section 3.7 below. Open codes not included in the list but judged to be emergent in the data and relevant to the study's purpose and research questions could be assigned during the coding process, as recommended by Charmaz (2006) and Kvale and Brinkmann (2009, p. 202), among others; these codes included open codes from the content analysis phase. Measures to ensure the trustworthiness of the data and analysis were taken as discussed in section 3.9.

3.7. Qualitative Data Analysis

All qualitative data—consisting of the messages collected for the content analysis and transcripts and notes from the interviews—were imported into NVivo 10 qualitative analysis software, which was used to look over each transcript and assign codes.

For analysis, an approach similar to grounded theory (Charmaz, 2006; Strauss & Corbin, 1994) and its constant comparative method was taken, but without the same focus on open coding. Codes were first applied to sentences in messages or in participants' interview responses (as transcribed). Only the lowest, most detailed level of codes, as presented in the codebook (sections 3.7.2 and 3.7.3 below), were applied. Two exceptions to sentence-level coding were allowed. For the content analysis phase, no more than two codes could be applied to an entire message if there was clear evidence for them throughout the message. For the interview phase, no more than two codes could be applied to a paragraph, answer to a question, or short exchange (no more than half a page) if there was clear evidence for them throughout the paragraph,

answer, or exchange. No other exceptions were allowed to this rule; codes could not be applied to units smaller than sentences (to provide sufficient context), and were required to be applied individually to multiple messages, answers, or exchanges. Memos and annotations were made to explain any cases where code(s) were applied across multiple sentences within a message or interview transcript at once, and to explain codes in greater detail where deemed necessary; a general rule of "if in doubt, add an annotation" was followed throughout analysis. These rules were refined and clarified after initial pilot testing, details of which are given in section 3.7.1 below.

After initial analysis, higher levels of analysis looked at the coding in the context of paragraphs, entire messages, message threads, and larger portions of interview transcripts, considering these in light of other threads, messages, and interviews. Throughout the coding and analysis process, consideration of the social and information worlds was explicitly multi-leveled: worlds of multiple sizes, shapes, and types were considered throughout the processes of collecting and analyzing data. The boundaries of these worlds, and where these worlds fell on the continuum of existing and emergent worlds, was considered emergent from the data, based on the conceptual, theoretical, and operational definitions given in earlier sections and in the coding scheme below. Memos and annotations were provided to explain the levels of social and information worlds under consideration, especially when boundary-related codes were applied.

The search, query, and report features of NVivo were used in further analysis and the writing of sections 4.1 and 4.3 of Chapter 4. While messages and individual interviews (as the units of analysis) and sentences within them were coded as individual units, higher level units— passages, threads, groups, social and information worlds, and LibraryThing and Goodreads— were considered as the analysis proceeded. This allowed findings and conclusions to be drawn at multiple levels, as can be seen in Chapters 4 and 5.

3.7.1. Pilot Testing and Resulting Changes

Pilot testing of the coding scheme and analysis procedures was conducted prior to the content analysis phase. Two fellow FSU iSchool doctoral students, having basic familiarity with the theories incorporated into the theoretical framework used here, were recruited to test intercoder reliability. Each student volunteer was provided with a "quick reference" version of the coding scheme in sections 3.7.2 and 3.7.3 below, with the final version used by the researcher as a guide for analysis included in Appendix D. Pilot test coders were given a

summary of the coding rules and guidelines discussed herein. The second volunteer discussed the coding scheme, rules, and guidelines at some length with the researcher—including some brief practice coding—before coding began, and both volunteers took part in debriefing sessions with the researcher after coding had been completed. The researcher and the first volunteer coded the messages selected for the pilot test of the content analysis phase—120 messages, 60 each from one LibraryThing and Goodreads group. Changes were made after this coding cycle based on intercoder reliability statistics—using Cohen's (1960) kappa as calculated by NVivo—and qualitative and holistic analysis of the results, and a second cycle proceeded. Further changes were made after this second cycle.

Changes were made to address weaknesses identified in the original procedures, coding scheme, and theoretical framework, to help ensure theoretical and operational clarity. Changes made after the first cycle were as follows:

- Codes were only to be applied at the sentence level, with two exceptions as mentioned earlier.
- Memos and annotations were stressed, especially to explain codes applied at levels higher than the sentence level and to explain coding in greater detail where deemed necessary.
- Boundaries of worlds were to be considered emergent from the data, with memos and annotations recommended to explain the level of social and information worlds under consideration.
- Definitions for all concepts were refined and tightened.
- Cases where social norms or information value had broad application, across substantial parts of a thread or interview, were to be memoed or annotated instead of coded, since the latter was seen to be of less use for later analysis.
- Information behavior was tightened, to consider only behavior that was normative at some level and to exclude general occurrences of information behavior, since under the latter interpretation whole threads and interviews could be coded.
- If it was unclear whether a new world—of any size or scale—had truly emerged, memos and annotations were recommended to express the degree of confidence.

- Three subcodes were added to account for different cases of LibraryThing or Goodreads acting as a standard boundary object: as an emergent site, an emergent technology / ICT, or another type of emergent boundary object.

Changes were made after the second cycle of coding and discussion among the researcher and multiple committee members, as follows:

- The distinction between existing and emergent was stressed to be along a continuum, and to be a phenomenon that would emerge from the research data, similar to the size and shape of the worlds and their boundaries. Memos and annotations were further stressed to elaborate on where given cases fall on this continuum.

- Codes and procedures were acknowledged to be complex, and to be using theories that had not been combined in previous research; the theoretical framework is emergent. As such, intercoder reliability statistics—as run using Cohen's (1960) kappa after each coding cycle of the pilot test and initially planned for a portion of the interview data—were considered a less appropriate measure of the potential trustworthiness, credibility, transferability, dependability, and confirmability of the findings than originally thought. Both pilot tests showed that reaching high statistical levels of intercoder reliability would require extensive training of other coders— difficult if not impossible in dissertation research—and much fine-tuning of rules and procedures, fine-tuning that does not fit the interpretive and social constructionist paradigms in use for this research. Other techniques for ensuring qualitative trustworthiness (Gaskell & Bauer, 2000; Lincoln & Guba, 1985), already built into the study (see section 3.9.3), would now be emphasized alongside intracoder reliability checking at the conclusion of the study; results of the latter are included in Chapter 4.

The following sections present the coding scheme used for each research question, as revised after the pilot testing. Section 3.7.2 includes the codes focusing on existing social and information worlds (RQ1), while section 3.7.3 includes the codes focusing on emergent social and information worlds (RQ2). The distinction between existing and emergent was treated as along a continuum, where the degree to which a world is existing or emergent was allowed to emerge from the research data. Frequent memos and annotations were made on this during analysis. An operational definition is given for the concept each code represents, as used in the

coding and analysis of data from the content analysis and interviews phases. These definitions come from the literature review presented in Chapter 2 and the theories and theoretical framework described therein, with contributions from definitions in the Oxford English Dictionary's online version (oed.com) where necessary and appropriate. A summarized version of the coding scheme, used as a quick reference during coding and analysis, is included as Appendix D.

3.7.2. Existing Worlds

3.7.2.1. Translation. Star and Griesemer (1989) defined translation as "the task of reconciling [the] meanings" of objects, methods, and concepts across social worlds (p. 388) so people can "work together" (p. 389). Multiple translations, gatekeepers, or "passage points" can exist between different social worlds (p. 390). This was operationalized as the process of reconciliation and translation of meanings—taken to include understandings—between different people, social worlds, or information worlds.

3.7.2.2. Coherence. While Star and Griesemer (1989) never gave coherence an explicit, glossary-style definition, it can be conceptualized as the degree of consistency between different translations and social or information worlds. Boundary objects play a critical role "in developing and maintaining coherence across intersecting social worlds" (p. 393). Coherence was operationalized using the common characteristics of social and information worlds, coded under the definitions given below. Coding took place at the level of these characteristics, not for coherence in general.

- *Social norms*: Burnett, Besant, and Chatman (2001, p. 537) defined social norms as the "standards of 'rightness' and 'wrongness' in social appearances" that apply in an information world. Jaeger and Burnett (2010, p. 22) restated this as "a world's shared sense of the appropriateness—the *rightness* or *wrongness*—of social appearances and observable behaviors." Drawing from these, social norms were operationally defined as the common standards and sense of appropriate (right or wrong) behaviors, activities, and social appearances in an information world. In some cases, a substantial part of or an entire thread or interview could be seen as socially normative, but it was decided that in those cases the social norms code would not be applied to every message or sentence, as doing so would not be of much use for later

analysis. Instead, a memo or annotation was made to note and discuss the application of social norms to large parts of a thread or interview.

- *Social types*: Burnett et al. (2001, p. 537) defined social types as "the [social] classification of a person." Jaeger and Burnett (2010, p. 22) elaborated on this, stating social types are "the ways in which individuals are perceived and defined within the context of their [information] world." This was operationalized following the latter definition and to include explicit and implicit roles, status, and hierarchy.

- *Information value*: Jaeger and Burnett (2010, p. 35) defined information value as "a shared sense of a relative scale of the importance of information, of whether particular kinds of information are worth one's attention or not." Such values may include, but are not limited to, "emotional, spiritual, cultural, political, or economic value—or some combination" (p. 35). Values may be explicit and acknowledged, or implicit within message content or interview responses. A succinct operational definition, used in this study for coding, is that information value is a shared sense, explicit or implicit, of the relative scale of the importance—emotionally, spiritually, culturally, politically, and/or economically—of information and whether it is worth attention. As with social norms, if a substantial part of or an entire thread or interview was seen as expressing the shared information values of a world, the code was not applied to every message or sentence; instead a memo or annotation was used.

- *Information behavior* and *activities*: Burnett and Jaeger (2008, "Small worlds" section, para. 8) defined information behavior as "the full spectrum of normative [information] behavior … available to members of a … world"; this was restated in different words by Jaeger and Burnett (2010, p. 23). Information behavior can include seeking, searching, sharing, or use of data, information, or knowledge; communication and interaction; and avoidance of data, information, or knowledge. Strauss (1978) did not provide an explicit definition of activities, but his use of the word within the social worlds perspective corresponds with one of its senses in the Oxford English Dictionary: "something which a person, animal, or group chooses to do; an occupation, a pursuit" ("Activity," 2012). A slight restriction was placed on this operationally, that the "something" should have an informational component (with information construed to include data and knowledge). Operationally, this code

was used to identify occurrences of normative, chosen information behavior and information-based occupations or pursuits—defined broadly—by members of a world. Such behavior had to be normative at some level to be coded, and general occurrence of information behavior were not coded, since under such an interpretation whole threads and interviews could be construed as such.

- *Organizations*: Strauss (1978) stated social worlds may have "temporary divisions of labor" at first, but "organizations inevitably evolve to further one aspect or another of the world's activities." This sense is similar to the definition of an organization as "an organized body of people with a particular purpose" found in the Oxford English Dictionary ("Organization," 2012). A combination of the two was used for operational coding: organizations are organized, but possibly temporary bodies with the particular purpose of furthering one aspect or another of the world's activities.

3.7.2.3. Boundary object. Codes were applied for treatment of the digital library as a boundary object. This was operationalized by coding passages where the digital libraries cross the boundaries between multiple existing social or information worlds and are used within and adapted to many of them "simultaneously" (Star & Griesemer, 1989, p. 408) while "maintain[ing] a common identity across sites" (Star, 1989, p. 46). Instances of the boundary object's use as a common site and information and communication technology (ICT) were coded using the definitions below. Coding took place at the level of these characteristics, not for boundary objects in general.

- Common *site*: Strauss (1978) related sites to "space and shaped landscape"; the term's use under the social worlds perspective corresponds to this sense given in the Oxford English Dictionary: "a position or location in or on something, esp. one where some activity happens or is done" ("Site," 2012). This location may be a physical, virtual, or metaphorical space, as seen in many of the concepts of community reviewed in Section 2.2. A succinct operational definition, used for coding, is that sites are spaces, positions, or locations—physical, virtual, or metaphorical—where information-related activities and behaviors take place.
- Common *information and communication technologies (ICTs)*: Strauss (1978) defined technology as "inherited or innovative modes of carrying out the social world's activities" (p. 122). ICTs are often referred to in the literature of LIS,

knowledge management, education, and other fields without explicit definition, and there is no one historical source all uses stem from. Remaining compatible with most of this literature and adapting from the definitions of Strauss (1978) and the Oxford English Dictionary ("Technology," 2012), ICTs were operationalized for coding purposes as inherited or innovative processes, methods, techniques, equipment, or systems—developed from the practical application of knowledge—used for carrying out information or communication-related behaviors and activities.

3.7.3. Emergent Worlds

3.7.3.1. Convergence. Convergence is seen in similar light to coherence, defined above as the degree of consistency between different translations and social or information worlds. Convergence was operationalized through the emergence of common characteristics in new social and information worlds (or proto-worlds), to be coded under the definitions given in section 3.7.1.2 above for *social norms*, *social types*, *information value*, *information behaviors / activities*, and *organizations*. Coding took place at the level of these characteristics, not for convergence in general; coding was kept separate from that for these characteristics under coherence. If it was unclear whether a new world—of any size or scale—had truly emerged, memos and annotations were made to express the degree of emergence seen in the data.

3.7.3.2. Boundary object as standard. Treatment of LibraryThing and Goodreads as a new, local standard for a new, emergent social or information world was coded in this category, to distinguish it from treatment of the digital libraries as boundary objects within and across existing information worlds (section 3.7.1.3). This will be operationalized under three subcodes, where all coding would take place:

- Emergent *site*: Under the definition of sites given above, cases of LibraryThing or Goodreads serving as an emergent, standard, and influential space, position, or location for information-related activities and behaviors were coded here. Clear evidence of the digital library serving as a new standard site for an emergent world was necessary. This code could be applied alongside the "emergent technology" code below, and in many cases this happened.

- Emergent *technology / ICT*: Under the definition of technologies given above, cases of LibraryThing or Goodreads providing emergent and standard processes, methods, techniques, equipment, or systems—developed from the practical application of

knowledge—used for carrying out information or communication-related behaviors and activities in an emergent world were coded here. Clear evidence of the digital library providing or serving as a new standard technology within an emergent world was necessary. This code could be applied alongside the "emergent site" code above.

- Emergent *boundary object*: Cases where LibraryThing or Goodreads served as an emergent, standard boundary object, but not as a site or technology, were coded here. Clear evidence of the digital library serving as such a role was necessary, and clear evidence that it was not serving as a site or technology was required. This code was expected to be rare and in reality was; it was applied only a few times in the content analysis and not at all in the analysis of the interviews. It was included to ensure all cases of LibraryThing or Goodreads serving as a new, standardized boundary object wer captured. This code was considered mutually exclusive with the "emergent site" and "emergent technology / ICT" codes above.

3.8. Data Management

I have kept all data from this study in digital format on my personal laptop computer. Survey data was kept in Microsoft Excel (.xls/.xlsx) format, interview audio in .mp3 format, and messages and interview transcripts in Microsoft Word (.doc/.docx) format. A password protected and encrypted disk image was created and used for all dissertation data, the password known to the researcher but no one else. Within this image, separate folders were created for each phase of the study. All data analyzed using the coding scheme discussed in section 3.7 above—including messages, interview transcripts, and notes—was also kept in an NVivo project (.nvp) file at the top level within the image. This disk image will be kept until the date arrives for destruction of records from this dissertation.

Filenames for data served and continue to serve as metadata, reflecting the source of the data (participant pseudonym or group name for individual data, phase name for collated results), the date it was collected, the digital library the data refers to (LibraryThing or Goodreads), and the type of data it represents (e.g. thread, survey response, interview transcript, interview notes, preliminary analysis). For example, *bob_GR_transcript_022914.doc* could be the filename for the transcript—in Microsoft Word format—of an interview with "Bob," a Goodreads user, conducted on the fictional date February 29, 2014. Three additional spreadsheets (in Microsoft Excel format) were created to provide metadata. Two—one for LibraryThing and one for

Goodreads—link participants' names and e-mail addresses to their psuedonyms; the other has kept track of survey data for interviewees, and was used during interview recruitment to help determine who would be invited to participate.

Encrypted and password-protected backups of all research data have been made on a weekly basis (with rare exceptions due to travel) onto an external hard drive kept at the researcher's home. Additional encrypted and password-protected backups have and will be made onto recordable CDs or DVDs, to be kept in a filing cabinet belonging to the researcher in the Shores Building on FSU's main campus or, once the researcher leaves FSU, in a similar secure work location. All research data for this study, including backups, will be deleted and destroyed by April 30th, 2019 (this date being fewer than five years from the completion of the study). Appropriate excerpts from the data (using pseudonyms) and synthesized data analysis, findings, and conclusions—including the completed dissertation, journal articles, and conference papers— may be shared with other researchers, scholars, and the general public up to and beyond the date given above. Future research data and findings building on the data collected and conclusions drawn during this study may be shared with other researchers, scholars, and the general public, subject to restrictions put in place by the researcher's home institution and funding source(s) at the time of such research.

3.9. Validity, Reliability, and Trustworthiness

3.9.1. Holistic: Mixed Methods, Case Studies

The validity and reliability of mixed methods studies can be assessed in two ways (Creswell & Plano Clark, 2011). One can look at the research as a whole, considering the study's design, interrelations, and how everything fits together to ensure high levels of validity and reliability. Towards this view, Creswell and Plano Clark provided a list of potential validity threats in mixed methods research and strategies for minimizing these threats (pp. 242-243), which have been followed throughout the design and execution of this research.

Yin (2003) provided similar guidance for case study designs, summarized in his Figure 2.3 (p. 34). Each of these has been implemented in this study as follows:

- "Use multiple sources of evidence": Three different methods of data collection have been used, each sampling across different groups and users from LibraryThing and Goodreads.

- "Establish chain of evidence": The methods were linked together and informed each other. Data from content analysis helped inform the survey instrument, while the content analysis and survey data helped inform the interview instrument, process, and analysis. Data from all three methods has been tied together in the overall findings and conclusions from the study (see Chapter 5).

- "Have key informants review draft case study report": While this specific technique was not used, I confirmed with interviewees that my impression of the critical incident they shared was accurate prior to the conclusion of each interview. Participants who requested a report of the findings on completion will receive one within a few weeks after defense of this dissertation.

- "Do pattern-matching": Here Yin refers to looking for "several pieces of information from the same case [that] may be related to some theoretical proposition" (p. 26). This study achieved this by maintaining a consistent focus on the same phenomena throughout all three phases and using the same themes—based on the theoretical framework developed in section 2.8—for coding the messages (in the content analysis phase) and interview transcripts (in the interview phase).

- "Do explanation-building": Here Yin refers to establishing a cause-and-effect relationship between patterns in data and theoretical propositions. The pattern-matching above, combined with the theoretical framework discussed in section 2.8 and the philosophical and epistemological viewpoint provided by social informatics and social constructionism, allowed such explanations to be developed through synthesis of data from all three phases (see Chapter 5, sections 5.1 and 5.2).

- "Address rival explanations": While I admit favoring the theories used in the theoretical framework developed in section 2.8, other theories related to communities, collaboration, information behavior, and knowledge management—reviewed elsewhere in Chapter 2—could have provided a better explanation. The existing literature in these areas and my knowledge of them is used in later sections of Chapter 5 to address possibilities beyond the theoretical framework that relate to the findings seen here.

- "Use logic models": Due to limitations of this study (see Chapter 5, section 5.7), a visual model may be premature at this point. I may develop figures, diagrams, and

other visual aids to help present the findings as part of posters, conference papers, journal articles, and research presentations.

- "Use theory in single-case studies; use replication logic in multiple-case studies": While this is a multiple-case design, only two cases are considered here. Theory—the theoretical framework in section 2.8—and replication logic—multiple groups and two digital libraries—have played important roles in the design and execution of this dissertation study.

- "Use case study protocol": Constraints placed on procedures by the two sites were unavoidable, but where possible the same procedures were used for LibraryThing and Goodreads. Messages were collected and analyzed the same way; surveys distributed, collected, and analyzed the same way; and interviews followed the same themes and procedures. The extra requirement to obtain the consent of group moderators put in place by Goodreads prior to collecting messages and survey responses from users of that digital library did not cause great differences in the data collected or its comparability with that from LibraryThing groups. The researcher took care to document the study as it proceeded, including deviations in procedures that became necessary; the most notable of these was the need to vary the intended statistics and accept greater limitations on the survey results than were at first intended, as discussed above and in Chapter 4, section 4.2.

- "Develop case study database": Given few cases in this study, a formal database was not constructed. The data management procedures discussed in section 3.8 and NVivo qualitative analysis software—which runs on a Microsoft SQL Server database—provided similar benefits to Yin's recommendation here.

While holistic consideration of validity and reliability is useful, a second approach is necessary: examining the validity and reliability of each phase of a mixed-methods study—quantitative and qualitative—as an individual method. Each type of research has "specific types of validity checks" to perform (Creswell & Plano Clark, 2011, p. 239), since—despite the continuum mentioned by Ridenour and Newman (2008)—different methods require different measures of their reliability and validity. The two sections below take this approach and apply it to the quantitative—survey—and qualitative—content analysis and interview—phases of the dissertation study conducted here.

3.9.2. Quantitative: Survey

Validity and reliability for quantitative research are given substantial treatment in research methods textbooks, such as Schutt (2009, pp. 130–141) and Babbie (2007, pp. 143–149). The validity of the survey data can be broken down by the different types of validity these and other authors identify as used for quantitative research:

- *Face validity* (Babbie, 2007, p. 146; Schutt, 2009, p. 132): Given that the survey questions were developed from the theories discussed in Chapter 2 and the theoretical framework developed in section 2.8, each of which have face validity, the questions are judged to have met face validity for measuring the phenomena in question.

- *Measurement validity* (Schutt, 2009, pp. 130–132): The survey questions were looked over by the researcher and his supervisory committee to ensure they did not suffer from idiosyncratic errors due to lack of understanding or unique feelings; from generic errors caused by outside factors; and from method factors such as unbalanced response choices or unclear questions. Attention paid to other kinds of validity helps improve measurement validity.

- *Content validity* (Babbie, 2007, p. 147; Schutt, 2009, p. 132): Using multiple scales and multiple questions per scale helped the questions cover "the full range of [each] concept's meaning" (p. 132) and the full range of the roles of LibraryThing and Goodreads in the social and information worlds of their users. The content analysis and interviews provided data from fewer users, but much thicker description of the phenomena of interest, as one would expect from qualitative research methods.

- *Criterion validity* (Babbie, 2007, pp. 146–147; Schutt, 2009, pp. 132–134): This is difficult to measure here because no survey-based measures are known to have been developed for the theory of information worlds or boundary object theory prior to this study, and the social worlds perspective makes rare use of surveys. Schutt stated that "for many concepts of interest to social scientists, no other variable can reasonably be considered a criterion" (p. 134); Babbie (2007, p. 147) advocated using construct validity in these cases instead. Fowler (2002, p. 89) made a similar argument for questions "about subjective states, feelings, attitudes, and opinions," believing "there is no objective way of validating the answers … [they] can be assessed only by their correlations with other answers," through construct validity.

- *Construct validity* (Babbie, 2007, p. 147; Schutt, 2009, pp. 134–135): Most of the measures used in the survey significantly correlated with each other, as one would expect given their relations to each other in the social worlds perspective and the theory of information worlds.

- *Reliability* (Babbie, 2007, pp. 143–146; Schutt, 2009, pp. 135–138): While the survey was not repeated by each participant, using multiple measures of each concept and triangulation of the findings via the content analysis and interview phases of the study served a similar role to measures of test-retest or pre- and post-test reliability in an experimental design. The reliability of the scales was analyzed, while the randomization of survey questions (except the demographic questions) helped improve reliability.

3.9.3. Qualitative: Content Analysis and Interviews

A few qualitative and mixed methods researchers hold to positivistic treatments of validity and reliability, requiring use of quantitative measures such as intercoder percentage agreement, Holsti's (1969) coefficient of reliability, Cohen's (1960) kappa, or Krippendorf's (2004b) alpha. Most qualitative researchers, however, argue validity and reliability should not be ported over from quantitative to qualitative research with no changes, nor ignored; instead they must be adapted and changed to fit the naturalistic and ethnographic nature of most qualitative research (Gaskell & Bauer, 2000; Golafshani, 2003; Kvale & Brinkmann, 2009; Lincoln & Guba, 1985b; Ridenour & Newman, 2008). Which adaptations and changes should be put into place for qualitative research is the subject of debate (Golafshani, 2003). Golafshani found "credibility, … confirmability, … dependability … transferability," and "trustworthiness"—the last term preferred by Lincoln and Guba (1985b)—to be the most often terms used to describe the validity of qualitative research. No matter what term is chosen, validity is "inescapably grounded in the processes and intentions of particular [qualitative] research methodologies and projects" (Winter, 2000, p. 1, as cited in Golafshani, 2003, p. 602). Dependability and trustworthiness were the closest linked to reliability in qualitative research by Golafshani (p. 601) and Lincoln and Guba (1985b).

This dissertation research study, while drawing from all of the sources cited above, adapted the criteria and techniques cited by Gaskell and Bauer (2000) and Lincoln and Guba (1985b) for ensuring the validity and reliability of the qualitative phases of the study. These are

discussed below, following four broader categories of trustworthiness outlined by Lincoln and Guba.

3.9.3.1. Credibility. The sequential, multiphase design allowed for prolonged engagement with the environment—19 months from prospectus defense to dissertation defense—and persistent, detailed observation of the phenomena under consideration. Using an approach for coding and analysis similar to the constant comparative method of grounded theory (Charmaz, 2006; Strauss & Corbin, 1994) helped ensure breadth and depth. Methods were triangulated via the sequential, multiphase design, where each method reflexively informed and was informed by the others and the theoretical framework developed in section 2.8. The theoretical framework provides two perspectives—the lenses of the social worlds perspective and the theory of information worlds—that were triangulated in analysis, and the researcher was and is familiar with other social theories, models, and concepts of information and information behavior, some of which apply to the findings (see the later sections of Chapter 5). Triangulation of multiple investigators was difficult given the individual nature of a dissertation project, but the input of the dissertation committee and the researcher's colleagues was considered and welcomed at appropriate stages. Using member checking in the interview process and later methods in the sequential design to check earlier ones led to greater credibility for the study and produced a high level of communicative validity.

Statistical intercoder reliability testing, while used during the pilot testing of the content analysis procedures, was later and is now considered less appropriate for this study; the combination of theories incorporated in the theoretical framework was being used for the first time, and as such the coding scheme and framework should be considered at least somewhat emergent. The coding scheme and procedures are acknowledged to have been quite complex. Statistics such as Cohen's (1960) kappa or Krippendorff's (2004) alpha are not very compatible with this exploratory study, using an emergent framework, and following an interpretive approach to analysis (Ahuvia, 2001). The pilot testing of the content analysis procedures, incorporating intercoder reliability testing with Cohen's kappa, showed that reaching high statistical levels of intercoder reliability would require extensive training of other coders— difficult if not impossible in dissertation research—and much fine-tuning of rules and procedures, fine-tuning that might be appropriate for a non-dissertation, post-positivistic study, but does not mesh with the interpretive and social constructionist paradigms in use here nor fit

with the nature and resources of dissertation research. Intracoder reliability testing was performed, using percent agreement and Cohen's kappa, for the content analysis and interviews; this is reported in Chapter 4 at the beginning of each section of findings. Stressing of the other measures discussed here to address credibility and qualitative trustworthiness is believed to have been enough to overcome any limitations caused by not using intercoder reliability statistics.

        3.9.3.2. Transferability. Every effort was made in the prospectus to be transparent in how the research would be conducted, and such transparency carried over to the research and to writing this dissertation. The data collection for the content analysis and interview phases was constructed to provide valid and complete results, from reaching saturation, leading to insightful analysis; this has occurred. As seen in Chapters 4 and 5, the data allow for thick description (Geertz, 1973) of the phenomena in context, taken from messages and interview transcripts, which can allow other researchers to assess the potential transferability of the research findings to other settings.

        3.9.3.3. Dependability. As discussed above, every effort has been made to be transparent in the conduct of this research. The data collection for the content analysis and interview phases provides valid and complete results, having reached saturation, leading to insightful analysis. I remained transparent with users who were surveyed and interviewed, disclosing the full and true purpose of the study and not engaging in deception. Using participants whose survey or content analysis data indicated they would provide interest and insight in an interview helped satisfy Gaskell and Bauer's call for revealing and relevant findings, and I feel what is found in Chapters 4 and 5 also fits. By ensuring saturation was reached in the interviews, the dependability of the study is increased further. While the inquiry audit suggested by Lincoln and Guba was not implemented for this study, the process of defending the prospectus and dissertation and the guidance of the dissertation committee throughout the process has served a similar purpose.

        3.9.3.4. Confirmability. The data analysis process included memoing, annotating, and note taking at appropriate moments, including reflective comments on the data and the researcher's experience. The researcher noted any and all reflective comments on the research study, theoretical framework, data collection process, and data analysis process during all phases of the project. Triangulation (as discussed above) helped ensure confirmability. While the formal confirmability audit suggested by Lincoln and Guba—examining if findings, interpretations, and

recommendations are supported by the data—was not implemented for this study, the process of defending the dissertation serves a similar purpose.

3.10. Ethical Considerations

This study is not known to have violated any ethical principles or procedures. The content analysis phase used messages accessible to the public, posted in LibraryThing and Goodreads groups, as its source of data. The identities of the users who posted each message remains confidential. Usernames have been used to allow for identifying common message authors in a thread, for analysis of the flow of conversation, and for identifying potential participants for later phases of the study, but have not been and will not be part of further analysis, results, and publications. Identities have remained confidential throughout the survey and interview phases of the study, and will continue to do so after a defended dissertation. Psuedonyms have been and will continue to be used in any published or unpublished reports of the results and conclusions, and any other data or information with the potential to identify participants to people familiar with them has been altered for the purposes of this dissertation and future presentation and publication.

Informed consent was obtained from participants in the survey and interview phases, before they completed the survey instrument or participated in the main portion of the interview, and—as required by Goodreads for use of their digital library as a setting for this research (see Appendix A, section A.1)—from the moderators of Goodreads groups. Their participation was voluntary; any participant who wished not to complete the survey or be interviewed, or wanted to request an interview be stopped or their survey data be deleted, would have been accommodated and allowed to not take part in or withdraw from the study. Moderators had the same right when it came to deciding if their group would take part in the study as a whole. No users or moderators who had previously consented expressed feeling uncomfortable and wishing to withdraw. Some moderators and potential interviewees did not respond to invitations, and one potential interviewee did not show up for her interview time and never responded to inquiries, but it is unclear why she chose to withdraw or why others were not interested in—in some cases further—participation. If any participants wish to withdraw their data from the study in the future, after already completing the survey or having been interviewed, their survey results, interview transcript, interview audio recording, and notes taken by the researcher after their interview will be removed from the data collected and analyzed as best as is possible, although

their data will have already been analyzed and affected the conclusions drawn from data analysis (seen in Chapter 5). This is an unavoidable consequence and will be dealt with as best as possible by the researcher, should it occur.

On the opposite end of the research lifecycle, in two of the LibraryThing groups—which will not be named to maintain confidentiality and not "rock the boat" where it is unnecessary—a small number of users (five to ten) responded to the survey invitation post with comments disliking the survey instrument or facing confusion over the questions asked. I answered the questions and queries as best as possible without causing excessive bias in the survey results, but there was not much that could be done to please some users. They were, strictly speaking, not expressing any uncomfortable feelings—if anything they made *me* more uncomfortable than my survey had done to them—but this is worth noting as a negative reaction. It was not the norm; most participants were happy to complete the survey without incident, and no harm or risks occurred to any participants, greater than those experienced in everyday life, as a result of viewing or completing the survey or participating in the research in other ways.

The study was explained to participants in all letters they received, at the beginning of the survey in the informed consent statement, in the interview informed consent statement, and in verbal form at the beginning of the interview; see Appendix A for the letter and consent forms. As such, participants should have had complete awareness of the potential risks (or lack thereof) and benefits, that their participation was and is voluntary, and of the compensation provided, before giving their informed consent for each phase of the data collection. Participants were not deceived in any way at any point during this study. The potential benefits to the participants, as users of the LibraryThing or Goodreads digital libraries, were great enough to outweigh any small possibility of harm or any risks discussed above. The identity and affiliation of the researcher was known to all prospective participants via the invitation letters and informed consent statements, and the purpose of the interview and reasoning behind it was reiterated to each interview participant at the start of their interview. There were no issues seen with the researcher (as interviewer) maintaining appropriate boundaries with participants during the interview phase of the study.

The FSU Human Subjects Committee, an institutional review board (IRB), approved this study, including the pilot test of the content analysis phase. Documentation of this approval can be found in Appendix E, section E.3.

3.11. Conclusion

This chapter has presented the details of the method and procedures for this dissertation research study. The use of content analysis, a survey questionnaire, and semi-structured interviews in sequence within a mixed methods research design addressed the purpose of the research: to improve understanding of the organizational, cultural, institutional, collaborative, and social contexts of digital libraries. As stated in Chapter 1 and shown in Chapter 2, these contexts have important effects on users, communities, and information behavior. There is a clear need for theoretical and practical research into the roles digital libraries play within, between, and across communities, social worlds, and information worlds. This study helps satisfy that need.

The research design is well-grounded in epistemology and theory, previous research, and previous and existing practice; Chapter 2 provides this necessary context. The study operates under the tenets of the social paradigm, social informatics, and social constructionism, and incorporates boundary object theory, the social worlds perspective, and the theory of information worlds into its theoretical framework. This design has allowed for data to be collected and analyzed, at multiple levels and using multiple methods, on the roles that LibraryThing and Goodreads, two cases of social digital libraries, play as boundary objects in translation, coherence, and convergence between existing and of emergent social and information worlds. Chapter 4 turns to presenting the findings from this data and analysis of it, with Chapter 5 providing greater synthesis and discussion of the findings, implications, and conclusions of this research.

CHAPTER 4

FINDINGS

This chapter presents the findings from this study organized by method. Given the sequential, multiphase research design used (see section 3.3), this chapter begins with findings from content analysis of messages in the nine groups, then turns to the results of the survey of members of and visitors to the nine groups, and concludes with reporting analysis of the interviews with select survey takers. All three methods address the two research questions introduced in Chapters 1 and 3, repeated here for reference:

RQ1.   What roles do LibraryThing and Goodreads play, as boundary objects, in translation and coherence between the existing social and information worlds they are used within?

RQ2.   What roles do LibraryThing and Goodreads play, as boundary objects, in coherence and convergence of new social and information worlds around their use?

Each method addresses each of the two digital libraries studied, LibraryThing and Goodreads (see section 3.2); findings from each case are integrated together in this chapter, per method, for a fuller, more descriptive picture of the phenomena of interest that impact the roles the cases play, as boundary objects, in existing and emergent social and information worlds. Differences and commonalities in results between the two cases are mentioned here where appropriate. A synthesis and discussion of the findings across the three methods and in relation to the literature is provided in Chapter 5. The briefer summary of the findings to be found in section 5.1 may serve as a more useful entry point for some readers, who are encouraged to return to this chapter for further details of findings that interest them.

4.1. Content Analysis

The research design for the content analysis phase of the study was reviewed in section 3.4. After groups were sampled following the procedures in section 3.4.2, 286 messages were collected on May 24th, 2013 from the discussion boards of five LibraryThing groups, and on June 21st and July 9th, 2013 233 messages were collected from the discussion boards of four Goodreads groups (three in June, one in July), for a total of 519 messages. Five Goodreads groups were sampled at first, but data for one of these groups had to be dropped in late June, before content analysis began, when it was discovered that its sole moderator was under 18 and

could not provide consent. A pilot test was conducted with two separate groups prior to the main content analysis phase beginning; see section 3.4.3, 3.4.4.1, and 3.7.1 for further discussion of this test. Qualitative analysis of messages then proceeded as mentioned in section 3.4.4, using the codebook and associated procedures provided in section 3.7.

For the purposes of intracoder reliability testing, a subsample of 20% of the messages analyzed during the content analysis phase was coded a second time at the end of the study. This subsample consisted of threads selected at random from across the nine groups, with an eye to a sample balanced between messages posted on LibraryThing and Goodreads. 103 messages were recoded from 8 threads, 41 from LibraryThing and 62 from Goodreads. Intracoder reliability testing produced an average of 96.2% agreement on codes applied, with a Cohen's kappa of $\kappa = 0.7011$. Such a value is considered to represent "substantial" ($0.60 < \kappa < 0.80$; Landis & Koch, 1977, pp. 165) or "fair to good" ($0.50 < \kappa < 0.75$; Fleiss, 1981) agreement in coding. Brief review of those codes and sources where agreement was not "substantial" ($\kappa < 0.60$) on Landis and Koch's scale indicated most disagreements were on the potential meaningfulness and importance of codes, with one or more codes applied to sentences during the initial analysis that did not contribute significantly to later holistic analysis. Some variation in the codes applied and in the relative significance of codes is understandable, given the different knowledge held during the initial content analysis phase versus once all data analysis was complete.

The subsections below cover results of relevance to each of the phenomena of interest under the theoretical framework, with emphasis on those phenomena found to play significant roles in the coherence, convergence, and information behaviors of users of LibraryThing and Goodreads. Quotes were selected from those coded for these given phenomena (see section 3.7) based on their representativeness and potential insight in answering the research questions and explaining the roles played by the two digital libraries in relation to each of the phenomena and groups. Names and other information that could identify participants—including the book series of interest in two of the groups—were changed to protect the confidentiality of users. Pseudonyms were chosen with an eye to representing participants' perceived ages, genders, and ethnic backgrounds; for example, a hypothetical user whose real name was "Michelle" and believed to be middle-aged would be given an American female pseudonym appropriate for a 40-year-old, such as "Amy," instead of being called "Tony" (wrong gender) or "Gertrude" (wrong perceived age). The nine groups are referred to by letters: Groups A-E are the five LibraryThing

groups, while Groups F-I are the four Goodreads groups. The topics of each group can be characterized as follows:

- Group A: Science fiction literature
- Group B: Audio technology in relation to books
- Group C: C. S. Lewis's *The Chronicles of Narnia* series of young adult (YA) fantasy books
- Group D: Books by a given publisher (who founded the group)
- Group E: The universe of Frank Herbert's *Dune* science fiction series
- Group F: Eclectic, diverse, and challenging reading across different genres
- Group G: Historical fiction
- Group H: The love of literature and reading
- Group I: Hobbyist writing of fiction

Many of the phenomena of interest were found to play one or more roles in the processes of coherence and convergence of communities within and around the groups and the two digital libraries. Phenomena that played particularly important roles included emergent information value, sites, technologies, social types, and social norms; these are discussed first below, followed by the remaining concepts.

4.1.1. Information Value

4.1.1.1. Key in two groups. In many groups information value played a role in coherence and convergence, and it played a key role in the latter around and within LibraryThing Group B and Goodreads Group F. In Group B, members spent much time establishing common values of which audiobook narrators were best and of the qualities they valued in narrators. The narrators would sometimes be socially typed in relation to their qualities or their status as narrators, as with one user who stated "I agree with Marie, some recordings are pretty good considering they are done by volunteers." In this first example, the type of "volunteers" is raised, and given the characteristic of producing lesser quality recordings than professional audiobook narrators. In a second example a user responded to another, saying "I'm with you though, if a reader does bad voices / cannot characterize one sex well / reads with an unnatural cadence I just do not stick with it (unless the book is REALLY short)." In this case, the qualities and information valued are made explicit; this user wants a narrator who can do many voices well and read the audiobook naturally. Other users discussed their personal values in relation to audiobooks and audiobook

narrators, finding common ground that became the values for an emergent information world and community formed by a significant subset of Group B, albeit implicitly in most cases.

In Group F, the welfare of a member's cat became a common value for building community, with other users expressing shared concern in a affable and caring way over time (e.g. "I do hope your cat's doing better now"), often with humor and sincere emotion injected (e.g. "keep my paws crossed" and "sending purry thoughts his way :)"). Group F also built common values around the thread topics they wanted to see established; when two new topical threads were suggested, many users chimed in to express their approval and agreement.

4.1.1.2. In other groups. Other groups expressed common information values, but with lower observed frequency. In these groups information values often focused on being open to contributions from other group members. For example, in Goodreads Group F a thread setting up a "challenge" where group members could score points for their reading activities included a message noting "there's still a couple of weeks before we start too, so if there's a really *exceptionally* good category you'd like to suggest, go ahead!" This sort of comment indicated a shared sense that informative contributions towards the group's activities—in this case, types or categories of reading activities that could score points for group members—were of value to members and moderators. This sense was shared and coherent within an existing information world—that of Group F—and less so convergent for an emergent subset of that group. A similar example is this following exchange, posted in a LibraryThing Group C thread where the users were playing a forum game:

| April: | Brad, you may want to check out this information thread [link]. It will give you an idea of who all the players are and what our nicknames are! |
| Brad: | April- Thanks; I forgot all about it. It is starred but I never posted to it and so it got lost in the shuffle! |

Here, Brad had forgotten about a useful thread that gave information about significant members of Group C, and April valued sharing this thread with him and others, believing it to fit the cohered information values of the group. Brad implies a shared valuing of the thread in his response, although this convergence is on a small scale within a small, emergent information world of two members, April and Brad. The level of convergence should be considered low given that Brad had "never posted to" the thread in question.

Smaller sets of users established common ground over the value—or potential value—of reading given books, authors, or genres and discussing them. Some typical examples of this included the comment "I'm also a great admirer of Fieldman's work"; a comment from a user stating

> …I am going to set this aside for a soon-to-read selection based on your recommendation and then I will totally be down for some discussion about it, so I will be sure to check in when I have finished to see if I can help you get one going on it.

…and, after two users had both recommended a particular author, "ah, great minds think alike - think you're obliged to check out Cook now :-)"

4.1.1.3. Coherence of individual information values. Individual expressions of information value were common, as users shared their opinions of books, authors, genres, products, and so on. The kinds of information behavior and information-related activities users chose to engage in implicitly indicated their information values and their thoughts on what they expected others would find of value. In some cases these values were seen to align with those of other group members, leading to coherence and—on occasion—convergence; in other cases this could not be determined from content analysis alone; and in still other cases values were divergent. When users disagreed, they were most often polite and did not cause conflict over differing opinions; "flame wars" or other disruptive behavior due to value disagreements were rare occurrences in the threads collected and analyzed.

Consider the following exchange in Group A; it began with a post by Will that was later removed, to which Brian responded "Please read [LibraryThing's author policy]. And when your message is flagged so as to hide it from view to prevent its use as advertising, do not take it too personally." Will, realizing the (apparent) error of his ways in violating existing, cohered LibraryThing information values and social norms around self-promotion, said "Sorry about that. I did the member giveaway and thought this was the right place to put up links for it to those who did not get it or would want it. I removed it." Brian had no desire to start a major conflict, as shown in his subsequent response "Good show! We're a very forgiving group. :)" This and other examples showed understanding of the coherence of information values and associated social norms shared in each of the digital libraries and in broader society and on the Internet as a whole, a role played by these phenomena in almost all of the groups.

4.1.1.4. Outsiders. In a few cases people beyond the group were included in the establishment of common information values, as seen in the following insightful example. One user posted a link to Group E to a knitted representation of a character from the *Dune* series of books, and another user responded by saying "I'm sending the link to my daughter, a *Dune* fan and a knitter." In this case, we see the sharing of common information values beyond the group, with multiple information worlds present that intersect: the world of the group, the broader world of *Dune* fans, and the world of knitters. Each world has a different set of information values, but all three overlap in sharing a common value of this knitted representation of a *Dune* character. The values are existing and coherent within each world, but emergent and convergent across the worlds as they establish an overlap via this user's comment.

4.1.2. Sites

The phenomenon of sites played somewhat of a lesser role than that of information value, but in many cases it was an important one in explaining the roles played by the digital libraries in users' communities. The Goodreads groups were more apt to use the digital library as an emergent site for information behavior and activities.

4.1.2.1. Emergence of sites in Goodreads. In Goodreads groups group moderators played an active role, setting up threads and folders (grouped collections of threads) as sites for structured, purposeful discussion and behavior. For example, threads and folders were set up

- "for people to post their progress reports and score updates, ask questions and just generally chat as we go" as part of a gamified reading activity;
- as "where we will post threads for the chosen group read";
- as a place for writing "the best [fictional, character-based] stories we can"; and
- for group reads themselves, in one case with a date given when discussion would begin and a note that "in the meantime, people can stop by this thread to chat, and I might post some bonus material about the book - but no spoilers until discussion opens please."

In these and other similar cases, the thread had a clear, defined purpose that users were not supposed to stray too far from. Norms would sometimes be enforced or develop as a way of enforcing this purpose (see section 4.1.5 below).

In a couple of cases, threads served as emergent sites for a few users to engage in discussion that, while not on the intended thread topic, was allowed to continue. One example

was a discussion of American Civil War literature in Goodreads Group G that continued for several long messages among three users (and may have continued further beyond the data collected and analyzed). Goodreads, Group G, and the thread in question served as an emergent site for this information behavior, despite the thread in question being intended for "threads for the chosen group read." This shows that enforcement of the purpose of a given thread (or site for information-related activities, in social world terms) was not always immediate.

4.1.2.2. Emergence of sites in LibraryThing. LibraryThing users, in comparison, established common sites less often than Goodreads users. In cases when such sites were established, topic drift would often occur; for example, a thread in Group D with the initial purpose of discussing one out-of-print book began discussing other books by the same publisher that were also out of print. Group C had a special thread where "derailment" of the topic was the intended purpose, resulting in a site within the group where non-normative information behavior and activities could take place and were encouraged. Group D, with formal connections to a book publisher, served as a partial exception to this rule, with more emergent sites existing—for discussion of the publisher's books and book series—in that group than in the other LibraryThing groups analyzed.

4.1.2.3. Existing sites: Weaker role. Invocations of existing sites for information behavior and activities were fewer, and often suggested a weaker role being served by LibraryThing and Goodreads in such behavior. Other external sites serving as information resources—online and brick-and-mortar booksellers, libraries, an audiobook web site, blogs—were mentioned and played a role, albeit not always a successful one. Some representative quotes include the following:

- "Amazing 5* and 4* reviews on Amazon and Goodreads already from those who got it on Amazon."
- "They do not have this book in Shell's book shop"; and later in the same thread, "it's not at the library :("
- "Right now most of my choices are dictated by which books are cheapest at the Kindle store."
- "I wanted to review it [a particular book] for LibraryThing and for a new blog that a friend and I have started: [link]. But alas, Amazon (or [the publisher) keeps changing the Kindle release date…"

112

Libraries were not a frequent topic of conversation in the threads analyzed; only two cases of them playing a role as external sites for information behavior and activities were seen, one of which was unsuccessful (as seen above).

4.1.3. Technologies

4.1.3.1. Types of use. Many users of LibraryThing and Goodreads were frequent users of technology to link within the digital libraries to pages for books, authors, or series, within the flow of their information behavior. Both sites provided this functionality in their group discussion board interface, although uptake of the feature was seen to vary from group to group and from user to user. Larger Goodreads groups featured more technology use of this kind, while technology use in LibraryThing was diffuse across the five groups and users within them, in most cases use being slightly less frequent than in the Goodreads groups. The two groups with the least use, Groups C and E, focused on a specific author (Herbert) and book series (*Narnia*) known to members of each group; linking to books by that author or to books in the series was not as necessary an activity. In the other seven groups sampled, linking to books, authors, or series made up a majority of occurrences of technology use identified in the data, and served to cohere the group together and help converge subsets of it into new communities (as discussed further below).

Other uses of technology were nevertheless prevalent. Users linked beyond their group and used the technology provided by LibraryThing and Goodreads to support the creation and continuation of sites for common information behavior. In one example a LibraryThing user tried to encourage others in Group B who might be interested in a particular book to come and join another group's group read, saying that "we're having a group read of it, so anyone interested in joining, the thread is here [link]." Other examples referenced technology provided by LibraryThing or Goodreads, such as discussion board threads and the "folders" that threads can be organized in within a Goodreads group's discussion board. A link to a page on LibraryThing relating to posting policies for authors was posted to Group A by Brian in one case (see section 4.1.1.3), resulting in Will using the technological features provided by LibraryThing to remove his offending post. Technology provided beyond the discussion boards was referred to, including polling features, user profile pages, and search functionality.

Users referenced organizational features provided by the digital libraries, such as the ability to create lists (or "shelves" in Goodreads parlance) of books one would like to read in the

future. For example, one Group F member stated they "actually stumbled across that book on [an audiobook service] a couple months ago, so it's on my library e-book wishlist but somehow it never made it to my Goodreads TBR [To Be Read shelf]." This same functionality was referenced by other users as playing a role in their information behavior, such as one—also in Group F—who said she had "been adding a LOT of books to my want to read list (thanks everybody)." In one case in Group G "the group's bookshelf" was referenced, a shared list used by the group to catalog all of the books read together as a group. Metadata for books was referenced, such as in these two examples—one from each digital library—where the technology was providing information that could be seen as incorrect:

- "I'm almost afraid to nominate this book [for a group read] since it does not have any of the Goodreads genre classifications (very loose, very subjective) attached to its record."
- "Series info is part of Common Knowledge that anyone [any members of LibraryThing] can edit, so if you find errors or missing books then feel free to change/add as appropriate."

4.1.3.2. Technology for community convergence. In a good example of technology use to support community convergence, Mia, a Goodreads user, had expressed interest in Group G in German literature and in Western European war literature, and in learning more about books within these genres. Another user, Jared, responded with information that could help the user satisfy their information need, using the technology provided by Goodreads to support Mia's finding of others sharing common interests, activities, and behaviors. Mia was appreciative, as seen in the exchange below:

Jared: Have you found the … German Literature group ([link]), yet?

Mia: Oh wow thanks! :) I'm sure to find more authors there.

Jared: My pleasure. I also sent you a friend request …. Also there is a "Books set in Germany" thread in this group, under [folder name], as well as many other interesting threads.

Mia: Thank you for the tips and for the friend request. I accepted it. I'll look into that as well. Cheers.

Jared: Have fun! I'm sure you'll enjoy [this group] (and Goodreads). It's a nice group of folks.

A similar, albeit simpler and less convergent example of technology use is shown in the sharing of a link to another thread in Group C by April in a conversation with Brad (see section 4.1.1.2 above). The case related in section 4.1.1.4 of a user "sending the link to [his] daughter, a *Dune* fan and a knitter" shows technology—in the form of the link in question—playing a role in the convergence of Group E and of a broader community beyond the group of *Dune* fans who are knitters.

       4.1.3.3. Technology for community coherence. Uses of technology that related to cohering existing social worlds were somewhat less common, but still often played a role in users' information behavior and in groups and communities. Occasional references to different forms of books—audiobooks, e-books, movies—were found scattered across the groups, and a couple of references to dictionaries (e.g. the Oxford English Dictionary or "OED") and reference books were seen. More common were links to external web sites that served as information resources, such as online booksellers, libraries, audiobook web sites, blogs, publisher web sites, and author web sites. These were used by many users and in many groups to aid in the exchange and sharing of information about books. Few links to social networking or social media-type web sites—other than blogs—were found, although many of the web sites that were linked included user-generated content (most notably Amazon.com, but also deviantART, Wikipedia, Huffington Post, and other examples).

       This latter kind of use was prevalent in LibraryThing Group B, who spent much time discussing audiobooks and audiobook narrators, as links to audiobook providers or particular audiobooks were of primary relevance to and played a large role in this information behavior. In another thread in the same group, users engaged in a short discussion of e-book readers after one user used their Nook to post, noting they could not link to the books they were discussing as the "Nook keyboard does not have the right brackets" necessary to insert a link. Another thread in this group was started by a user who wanted "advice and suggestions for an MP3 player that would be user-friendly, especially for someone who is not very comfortable with technology." Members of Group B discussed MP3 player hardware that could be used to listen to audiobooks and podcasts and quirks of the software used to transfer audiobooks to these devices, making suggestions and giving advice to help satisfy the user's information need.

4.1.4. Social Types

Social types played a lesser, weaker role in most groups, least prominent in processes of convergence of new information worlds, but nevertheless this role was an important one in many cases.

4.1.4.1. Common in three LibraryThing groups. In comparison with other groups, users of three LibraryThing groups—Groups A, B, and C—were much more prone to share social typing of members of the group, book authors, book characters, or other individuals known to the group. Group C played a forum game where defining characteristics of a character from the *Narnia* book series were given (e.g. "I am a girl," "I am in the same [school] year as [the main character]," "I have a sibling at [school name]") and other users would guess the character, based on these pre-existing social typings of the character as defined by the author, readers, and publisher. In LibraryThing Group B (and as discussed above in section 4.1.1), members spent much time socially typing audiobook narrators in relation to their qualities and characteristics, their status as narrators, or their other activities, as shown in the following examples:

- "[He] is particularly good - he read several chapters of [a specified novel] and has THE most lascivious voice ever - perfect for reading that one!"
- "When it comes to fiction audiobooks, though, readers with bad accents or voices that do not match the characters (i.e., making a little girl sound like a gruff old man with a bad head cold) drive me bonkers and sometimes drive me to stop listening…"
- "Each chapter [of a *Moby Dick* audiobook] is read by someone new (which admittedly is a little jarring that Ishmael has a different voice each chapter), some famous (Stephen Fry, for example) and some apparently not. … So far, most readers have been British, which actually seems fitting for this old book."
- "As you can see, some are better than others, but then again these are not professional readers - they're regular punters like you and me…"
- "I agree with Marie, some recordings are pretty good considering they are done by volunteers."

As those last two quotes show, "volunteers" or "punters" are given the characteristic of producing lesser quality recordings than professional audiobook narrators. Implicitly, a volunteer is seen as a lesser type than a professional. Other socially typed characteristics (e.g. being

116

famous or British, or both in Stephen Fry's case) impact on the perceived quality of audiobooks, but appear to vary in the minds of users and Group B as a whole depending on the context of a given book.

4.1.4.2. Nicknames and initials. In other cases, across most of the groups examined, shorter nicknames and initials were often used for well-known authors, as in these two examples:

- "Now, my question for the DFW fans … most of DFW's work does not provide the reader with a neat wrapped up conclusion anyway." Here, "DFW" refers to David Foster Wallace.
- "Have you noticed that Sir Pterry has a thing about Morris dancers and mimes?" Here, "Sir Pterry" is used in reference to Terry Prachett.

Similar practices existed for group members, as seen by a message that read "Mel (melanie123) is AJ's daughter. She's in college now and not around as much." Here Melanie is socially typed as—in addition to the shortened form of "Mel" and her username, "melanie123"—a daughter (of "AJ," who is socially typed himself by his initials), a college student, and an infrequent visitor to the group. The use of usernames, handles, nicknames, and psuedonyms throughout the site, instead of real names, to identify many users is a notable form of social typing, albeit one that is common throughout the Internet; there is coherence here with the existing, broad information world of the Internet.

4.1.4.3. Outsiders. Other less-famous individuals who were relative outsiders to the group were typed; in one example, a LibraryThing Group B user referenced his mother-in-law, who he thought might enjoy an MP3 player; he stated that he "listened to the audio of *The Help* this past winter and thought she'd really enjoy it…" He then shared characteristics of his mother-in-law with the group, who socially typed her in their discussion of potential choices for an audiobook player. A second example shows a Group D user giving characteristics that explicitly type his wife: "My wife is a professor of classics, and uses [a given novel] as one of the assigned texts for her [specific genre of drama] course at [a Midwestern U.S. liberal arts college]."

4.1.4.4. Roles. Typing took place of members of the group as a whole or to roles taken by group members. Users would often self-type or self-identify in "welcome" or "introduction" threads, intended to help group members get to know each other a little better by learning something about each other. (These cannot be quoted given the personally identifiable nature of

the information in them.) Another discussion led one LibraryThing Group A user to remark that "it's not as if we're a select and elevated small group of connoisseur literati anyway." This typed members of Group A as a whole as not fitting the implicit "book snob" stereotype, but as normal, everyday readers of books.

In another example within LibraryThing Group A, the social types of "active members" and "lurkers" or "inactives"—people who are members but are rare posters (if they post at all)— were invoked in a conversation about whether a "one must join the group in order to post" requirement should be kept or removed. The conversation later turned to the possibility of cleaning up the group's membership or threads, with "the admin" mentioned by Brett and others responding:

Brian: There is no such administrative power on LT [to remove members]… (By
                "administrator," I mean group administrator and not LT staff, who can do
                anything on here.
Nancy: Speaking of no such administrative powers, does anyone have the power
                to clean up old threads…?

This interaction shows the importance of social types and roles within the group and on LibraryThing as a whole to the information behavior and activities taking place there. It illustrates a difference between LibraryThing and Goodreads in the explicit social types that exist. While LibraryThing groups have administrators, no role exists with "the power to clean up old threads" in LibraryThing groups, other than the staff of LibraryThing as an organization, who are quite active on the site but do not have time to keep every group "clean." Goodreads groups have one or more group moderators, who have a role often invoked, implicitly or explicitly, in discussions and group activities, most notably in conjunction with establishing sites (see above) or social norms (see below). Moderators have more ability to keep their Goodreads group's membership and discussion boards clean than is possible for the administrators of LibraryThing groups. Those in charge of running LibraryThing and Goodreads were not always seen in a complementary light, as shown by the following social typing by a Goodreads group moderator: "I have no idea how the 'challenge' function works on GR (and they're not too forthcoming with tech support), so we're wingin' it."

Social typing was invoked for roles that went beyond LibraryThing or Goodreads themselves, but had impact on the information behavior and activities of users. One example,

posted in Goodreads Group H, was a user who stated a book is "a YA [young adult] novel and I promised her [the author] a while back that I'm gonna read it." The user posting this is taking on a self-defined type as "reader," and references an author. The author takes on an authorship type and a role as an active Goodreads member, since it appears likely—when the broader context of this quote is considered—that the user used Goodreads to make this promise to the author. By facilitating connections between social types, Goodreads has allowed a new information world to converge in relation to this group, this user, and the author in question.

Another example can be seen from a Goodreads moderator's opening post to a thread, where they requested members and users to "please take time to read the group rules on posting (especially authors)!" Here, we see group norms and rules being applied to all, but with explicit emphasis on the social type of authors. In this case the convergence is weaker, but in the group establishing rules and looking to enforce them on the existing type of authors—arguably from a different information world than that of the group—there are elements of an overlapping information world existing for the purposes of this thread and others related to it.

4.1.4.5. By rank. In the case of one thread in LibraryThing Group C, users engaged in social typing by rank on a quiz about the *Narnia* series they were discussing. The quiz reported the number correct and assigned a named rank to quiz-takers, based in the mythology and setting of the *Narnia* series and its storyline. Users, in self-reporting their results and ranks, would socially type themselves in relation to others who had taken the quiz. Some gave reasons and excuses, trying to explain their lesser rank in comparison to those earning a perfect score; e.g. "I rapidly did the quiz, having read the books once about 3 or 4 years ago … so I only got 75%." Others mocked themselves—"[Lower rank]? Oh no!"—or looked to bond with others who had not done so well, one user stating "I am a [high but not highest rank] as well, guess [we] will be colleagues :D"

4.1.4.6. Typing of organizations. While the theory of information worlds focuses on social typing of individual human beings, a few examples were seen of the typing of broader organizations. Publishers, TV networks, libraries, booksellers, and LibraryThing and Goodreads themselves were all loosely typed; for example, here is how a TV network and the company that owns it were typed by a LibraryThing Group A member:

> I read an article a month or so back about [company] and it mentioned other channels
> which [company] owned, including [a network]. The interesting thing (at least to me) was

that they referred to [the network's] 'intentionally cheesy' movies. I'd always assumed that the [network's] movies were unwatchable because they did not know how to make good ones.

Most of these occurrences were coded and analyzed in relation to organizations (see section 4.1.7 below), with the typing elements noted in memos and emerging from the data after further, more holistic analysis.

4.1.5. Social Norms, Information Behavior, and Activities

4.1.5.1. Goodreads moderators. While members and visitors to both sites tended to invoke shared social norms in discussions, common norms were more frequent in Goodreads groups and played a larger role in the convergence and emergence of communities. Indicative of this were the activities of group moderators, who often set and enforced norms when starting threads as sites for particular activities. (Disclosing the groups in question would risk identifying the moderators in question, given there are few of them, and so groups will not be identified within this subsection.) For example, the following was posted at the beginning of a new thread started by one of three group moderators in a Goodreads group:

Rules for Nominating: ONE nomination per member. There is no need to second or third a nomination. Do not nominate books the group already has read. LINK the title and book you are nominating. If you can not link please include the title and author in your nomination. If there is no author included in your nomination I will not accept it.

This established the thread as a site for nominating books for the group to read together and the rules and norms of the nominating process. Similar initial messages in threads for other groups served the same purpose, albeit the language used was in most cases a little weaker. For example, one thread began with the rule that "to allow enough time for as many people as possible to read, [members should] try and limit the page count [in suggested books] to approximately 200 - 250 pages maximum." In the case of another thread, the moderator stated that "people can stop by this thread to chat, and I might post some bonus material about the book, but no spoilers until discussion opens please." (See section 4.1.2.1 for additional examples of these thread-starting, site-forming, norm-establishing posts.) In each of these cases, most messages posted in a thread would then follow the norms set out in the first few messages.

Discussions might not stay within the social norms of the information world of the thread; for example, one thread in Group G intended to be for suggesting themes or books for a

group reading activity included a few messages where a few users discussed their favorite American Civil War novels. In many of these cases, the activity, behavior, and discussion could still be construed as normative for the group as a whole; in this example Group G's purpose was to discuss historical fiction, and so a discussion of Civil War fiction would be on-topic at the group level. The interplay of the social norms of different scales of information worlds played a role in these cases; while coherence and convergence might not take place at the thread level, the group cohered and convergence took place for a subset of users who found others with a common interest. One thread in a Goodreads group was notable in that the moderator explicitly changed the purpose for the thread over a year after it had been created, saying that she "decided just to add to this thread rather than create a new one." The thread had not gathered any additional posts after the moderator's initial rule-setting post for what kind of content should be posted in the folder containing the thread, so disruption in this case was minimal.

4.1.5.2. Group norms. Group-wide norms and rules, often made explicit elsewhere within the group, were referenced by moderators and others, such as a request for users to "please take time to read the group rules on posting (especially authors)!" On LibraryThing and Goodreads broad norms existed that discouraged and in some cases outright forbid authors and publishers from promoting their books. In some groups this applied to the entire group and all of its threads and folders; in other groups authors were allowed to post promotional messages in a specific thread or folder, but nowhere else. Group rules and norms would often reiterate this understanding to ensure authors complied and did not "spam" the group with book promotions. LibraryThing Group D was started by a publisher; in that case promotion of the publisher's books was accepted, but the site-wide norms led such promotion to be low-key, with the primary purpose being informative instead of marketing or sales-driven.

4.1.5.3. Existing norms. References to existing norms, within existing social and information worlds that intersected with those of each group, were made with some frequency. For example, the norms surrounding the appropriate and different uses of different audiobook players and software for transferring audio files were discussed in LibraryThing Group B; users of one player or one application had different norms for this process than users or another player or application, requiring additional translation and explanation. In another case, the normative meaning surrounding the meaning of an idiom used by an author was up for discussion in LibraryThing Group E, including historical and linguistic contexts of the phrase.

Group E raised how information worlds beyond the group might fit together when discussing potential TV adaptations of a set of novels. The norms of genres or forms of fiction (e.g. horror, apocalyptic, romance, fantasy, comics, graphic novels) were raised explicitly or implicitly as part of discussions, indicating the information worlds of fans of these genres or forms and the broader information world of fiction readers were intersecting with those of the groups in question. Another example of the social norms of existing information worlds came from one poster in Goodreads Group H who related the social norms of his "very strict high school" in comparison to the norms of society as a whole, at least within the European country he attended high school in. Discussions of the information values of broader information worlds would often include a normative component, such as one user who mentioned "the *Game of Thrones* books seem to be very popular and from what I gather also really good," the societal-level norm being that these books are popular and valued. Reciprocity was another societal-level norm referenced in some cases, such as the one Goodreads user from Group H (referenced in section 4.1.4.4) who suggested a book by an author who is active on Goodreads, adding that he "promised her a while back that I'm going to read it." This user did not feel that breaking his promise would be following the social norms of the broader community of readers and authors he was part of.

4.1.5.4. Normative information behavior and activities. Most occurrences of information behavior and activities were of interest because of their relation with the other phenomena of interest, as discussed elsewhere in this chapter. This was most true with social norms and normative information behavior, so the discussion of information behavior and activities has been placed here. Information behaviors and activities demonstrated common actions that group members took part in, spanning "the full spectrum of normative [information] behavior" (Burnett & Jaeger, 2008, "Small worlds" section, para. 8) expected by the theory of information worlds. Some examples can be characterized as true normative information behavior, with a clear connection to information seeking, use, sharing, or avoidance. Other examples do not have such a clear connection, but still fall under the view of "information-based occupations or pursuits" being considered under the view of activities, drawing from the social worlds perspective. Emergent distinctions between these two and difficulties encountered in coding will be returned to in Chapter 5; this section, following the coding procedures established in Chapter 3, treats information behavior and activities as one phenomenon.

Examples included introducing themselves to the group; using abbreviations (e.g. "TBR" for one's "to be read" list); following conventions for online communities and discussions (e.g. quoting from or making clear reference to previous posts); discussing the topic, question, or issue raised by a given thread; sharing information of relevance to one or more users, to a thread, or to a group as a whole, such as book reviews or answers to questions; editing one's posts to add information or correct typos; starting new threads to share information or express information needs and requests of relevance to the group's purpose; thanking others who shared useful information or helped out in other ways; following the structure set out by a moderator for e.g. suggesting books to read; playing forum games; and general geniality and friendliness.

An important example of normative information behavior and normative technology use in relation to social norms was that (as explained above in section 4.1.2) many users would link within the digital libraries to pages for books, authors, or series, within the flow of their information behavior. When users—as individuals or as collectives in threads and groups—did not do this, they could be seen as violating the social norms of the information worlds of LibraryThing and Goodreads. Most groups and threads stuck to these norms, but there were exceptions; as mentioned above, LibraryThing Groups C and E did not see the need to link to the book series and author they discussed, since they were core to the topic of the group and familiar to all members and visitors. Similar norms surrounded quotes or references to previous posts by user name or post number, as a form of technology provided by the digital libraries; adoption of these broader norms—common in many online communities—did vary somewhat among groups and users.

Another important normative behavior was that many of the group moderators in the Goodreads groups, and some active members in both digital libraries, had clear understanding that certain kinds of activities would help build community, and encouraged these where they could. These activities would include having discussions on relevant topics; encouraging members to share information, opinions, and values of interest to them; displaying interest in this when shared by other members; and an overall welcoming approach to managing the group. Common information values played a role in this. For example, in a thread started for discussion of a particular book, a Goodreads moderator replied to another user's post that they had "added this to my TBR [to be read] list… looks very interesting!" with the following:

> …this seems to be one of those books that you either love or hate…. I'll be keen to see which camp you fall into, Susan! I would really love to have a group discussion on this at some point. There's SO much to talk about…

The enthusiasm not just for the book in question, but for encouraging normative interactions, behaviors, and activities among the members of the group, of this group moderator is clear; other comments throughout this group (the identity of which is withheld to protect the moderator's identity) and others are further evidence of this normative role.

Another common example of socially normative behavior was the posting of appropriate, on-topic content in a thread; for example, information about oneself in a welcoming thread, or a suggestion of a book the group could read together in a thread asking for such suggestions. These norms could be subtle; for example, users might include more or less information about their book suggestion (plot, reasons for suggesting, links to its page on LibraryThing or Goodreads, etc.), indicating different degrees of convergence with the social norms of the emergent information world of the thread and group. In many cases, users who were new to the group or community would find themselves welcoming the new normative behaviors they had come across and the values represented in them; for example, one new member of LibraryThing Group F posted in a discussion of a book that they had "just found this group and I love [the author of the book], so I am certainly looking forward to this discussion!"

4.1.5.5. How to behave. Norms about *how* people should behave emerged; how new members should be treated, whether people should look out for the welfare of other members or their loved ones, what kind of jokes are acceptable, acceptable language, etc. Some of this came from broader societal or Internet-wide norms; for example, welcoming new members and helping them integrate into the community, an activity seen in multiple groups and common to many other online and offline communities. LibraryThing Group C contained one thread explicitly devoted to off-topic conversation that developed its own norms around self-referential jokes, puns, and double entendres, which were accepted and encouraged within the thread. Other behavioral norms were specialized. For example, Goodreads Group I had a folder where they engaged in collaborative story writing, where users were expected to post a few sentences of a story at a time and others would follow on. In the thread sampled from this folder, most users would place non-story content in double-parentheses ("(( ))") to separate it out from the story,

using the parentheses in messages that contained no story content to ensure no confusion and follow the established norm.

4.1.5.6. Topic drift and new threads. In other cases social norms about how to behave intersected with norms about the amount of digression from a thread or group's intended topic would be allowed, as in this case seen in a group reading discussion thread from Goodreads Group F:

Angela:	I will not be done [reading a book chosen by the group] by [then]. One of my senior cats required emergency surgery and that caused a lot of nail chewing on my part, poor little guy. He seems to be doing well but he has a 14-day recuperation ahead and he is 12 so kind of watching out for him.
Marie:	I will keep my paws crossed for your cat's recovery, Angela!
Angela:	Thanks Marie. So far, he is better every day… :-)
Vanessa:	[later in the day] I hope your little guy is still doing well. I probably will not be done by [then] either. …
Amelia:	[a day later, after brief discussion of the group read] … Angela - I do hope your cat's doing better now. Sending purry thoughts his way :)
Angela:	[another day later] Thanks, he is doing better every day.

Here, we can see that a social norm of looking out for the welfare of animals and of members' pets, when the topic is raised, trumps the social norm of sticking to the topic of the thread (the group read). Notable in this case is the involvement of a moderator, Amelia, who includes some on-topic conversation in her post, but does not try to stop the off-topic digression into the welfare of Angela's cat and engages in it, showing a level of emotion and care—and community convergence—that is a norm for this group and this moderator. Other examples of social norms indicated such community-converging information behavior and activities are quite common in many of the groups.

In other cases, new topics emerged within groups' threads and became normative within the existing thread, such as when the topic in a thread from LibraryThing Group D shifted from being about one particular book that was out of print to a discussion of multiple books that users would like to see reprinted by their publisher. The topic shift was not explicitly acknowledged within the thread, but was accepted by those posting in it. Topics became normative through the starting of a new thread, as typified in this exchange from Goodreads Group F:

Bob: … I do not know if you've done this before but I think it would be awesome to have a 'Best books you've read this year' thread around new year :-)

Carla: Yes! Seconded.

Marie: Thirded!

Angela: Sounds great and maybe state why this is our favorite read of the year.

Carla: I think it should be best AND worst. I know I've read at least one awful book this year…

Carla: … Oh hell, I'll go ahead [and] start a Best/Worst of 2012 thread! I think we've derailed this a bit … Update: Here it is, guys [link].

Marie: … And the derailing is the best part of these threads, eventually they will wander back onto the tracks. This one has probably been superseded by the one you just started anyway. Oh, wait - the whole best / worst thing was the derailing … Never mind, carry on!

Bob: Cool! Cheers Carla :D Looking forward to everyone's chat! :-)

In this case, we see Bob making a suggestion for a new thread for discussion of a particular topic, which others agree with. Then Carla decides to take an active role and create a new thread for this purpose, implicitly invoking a social norm that threads should not get "derailed" too far before returning to the intended topic. Telling in this is Marie's comment that such derailing "is the best part": The members of Group F, as a collective, realize and accept that new topics will emerge through their behavior and activities, and see this as a good thing for the group as a whole (an example of the shared valuing of informative contributions mentioned earlier). At the same time, threads are intended to stay on-topic and, as such, they should over time "wander back onto the tracks," with new threads established for emergent behaviors and activities. Members might forget where those "tracks" are, as seen in Marie's momentary confusion over the actual topic of the thread and her realization of the explicit and implicit social norms of the group and thread. Such off-topic discussions were frequent across many of the groups; groups on Goodreads were, on the whole, somewhat more cognizant of topic drift and would re-establish norms by splitting of a new thread or collectively reorganizing and accepting a topic diversion.

When groups played forum games—as in LibraryThing Groups C and E, who seemed to enjoy this activity more than the others—they would create new threads every now and then to

126

continue the game, in some cases not restating the norms and rules of the game that had already emerged or been established. This was also true of some groups' welcome / introduction threads. The reasons behind the necessity of a new thread were not always clear from the messages, but in at the case of at least Goodreads Group G appear to have been technology-related, as the "old thread was taking a while to load so let's start fresh in the new year!"

4.1.6. Translation

      4.1.6.1. Based on information needs. Translation occurred quite often in the messages analyzed, with users making frequent requests—whether they realized it or not—for the translation of meaning and understanding from the worlds of others to their world. This was most true when users would make requests based on their information needs or desires. Some examples typify this: "is this [book] a good place to start if you've never read any of his novels before?"; "… my question to you: does this line [an idiom] mean anything to anyone?"; and the following from LibraryThing Group B:

> I'd like to get an MP3 player for my mother-in-law. She enjoys reading, but I do not think she's ever listened to audiobooks. … I'm looking for advice and suggestions for an MP3 player that would be user-friendly, especially for someone who is not very comfortable with technology.

In most of these cases, the translation process continued in later messages, as users provided their understandings and the collective sense of a group (or subparts of it) around the request (offering e.g. the best MP3 player for a mother-in-law, the accessibility of an author's novel for those who have not read his work before, or the meaning of a phrase used by an author). In the more elaborated examples, meaning and understanding became socially constructed as multiple users engaged in discussion and translation activities. The Group E thread that began with the question about an idiom used by an author was the strongest example of this, featuring multiple interacting and intersecting information worlds. Users with different backgrounds, from different locations, or having different information and knowledge shared their understandings, meanings, and translations of the expression and its context.

      4.1.6.2. Disruptive circumstances. In another case, translation took place in the explanation of circumstances from other social and information worlds that could disrupt the boundaries of the group-as-community and their information behavior and activities. This

lengthy, but insightful example included multiple members of Goodreads Group F participating in a group read:

Amelia:	Well my copy [of the book] has not shown up yet. To add to my challenges, I'm getting migraines … The fact that I clearly need glasses at this point is not helping! I'm hoping to participate still, but I seriously doubt I'll be finished [in time] :(
Amelia:	[A couple of weeks later] I'm definitely not going to make this [in time]. New kitten says no. How is everyone else going?
Frank:	I just finished, however it was my second read of [that novel] so it went fairly quick.
Sherri:	I most likely will not be done [in time], either.
Angela:	I will not be done by [then]. One of my senior cats required emergency surgery and that caused a lot of nail chewing on my part, poor little guy. He seems to be doing well but he has a 14 day recuperation ahead and he is twelve so kind of watching out for him.
Carmen:	[a day or two later, after other messages about the cat's welfare] I hope your little guy is still doing well. I probably will not be done by [then] either. … Lots of work and a short hockey trip kind of got in the way. This book has been a tough read for me so far.
Amelia:	Okay, so should we go for [two weeks later] or a little longer?
Sherri:	I think [that date] would work for me.
Angela:	… Thanks, [that date] sounds good to me.
Amelia:	OK, [two weeks later] is the new start date. I'm only 10% in, but starting to really get into it.
Nate:	Hope that everyone's reading is progressing well :)
Amelia:	[nearly two weeks later] I'm only just over halfway through. And those footnotes are killing my eyes!

In this example, we see multiple reasons given by multiple users of why they can not participate in the group read discussion on the original date, with an eventual suggestion from Amelia (group moderator) to move the date two weeks later. The meaning and understanding of the deadline and of the purpose for the group read are socially constructed and translated in the back-

and-forth conversation that took place, and may need to be again if Amelia's last comment (the most recent collected and analyzed from this thread) is any indication.

In another case, unintended disruption was caused by a user not familiar with the norms and values of the community represented by LibraryThing and one of its groups, Group A, with Brian posting a link to LibraryThing's author policy (see section 4.1.1.4 above). Translation took place of the meaning and understanding of the purpose of a thread (or site, in social world terms) in the group, with reference to LibraryThing and group norms and values.

4.1.6.3. Explaining point of view. Translation sometimes included explaining the point of view of oneself, another user, or an author. A good, prototypical example of this is seen in the following comments from Goodreads Group F in relation to an author and one of their books:

John: [The author] did a great job developing [a particular female] character. I have not read his bio, but it seems like it would have to come from real life experience parenting a teenager. I kept feeling like I was reading an autobiographical account of [his] attempt to better understand his daughter, niece, or someone close to him.

Amelia: Absolutely. As someone who has been that daughter, it rang true for me too!

A few other examples typify translation and elaboration of one's point of view, such as a user who stated they "usually ignore the reviews and choose a book just because I like the title or the cover. (I know I should not judge a book by its cover, but I'm a photographer so I get attracted by the visual ….)" Another user of LibraryThing Group A questioned "the purpose of even having a 'join to post' requirement [in Group A] when it is so easy to join or to leave. It's not much of a barrier …" A third user and group moderator shared their views on the differences between graphic novels and comic books:

The difference mainly lies in the format of the story contained. A graphic novel is usually a self-contained novel-length story, while most comics are serialized month to month. Most graphic novels tell a single, complete story and their length allows for greater depth and character development.

This last example led to some discussion of the merits of graphical storytelling, with users comparing and translating their meaning and understanding of comic book and graphic novel media.

4.1.6.4. Other examples. Other examples of translation observed included explaining the connection of a comment to the thread topic; discussion of the intended purpose and topic of an existing or new thread (when not set in stone by a moderator); giving necessary context for information found, e.g. as potential spoilers from early drafts of a book; back-and-forth on the merits of a book (often in response to or as part of a posted review), a character from a book or series, or of an author; and discussion of the understanding of a news or opinion article shared in a group. Plot points were translated and placed into context for other users, such as with one user's explanation that "incoming war with the Lunar Alliance … in context is like Java going to war with the United States."

One final example of translation is atypical in that it comes from a publisher's account in LibraryThing Group D, responding to a user's "quibble" about the style of notes (i.e. footnotes or endnotes) used in a particular book edition:

> The placement and format of notes and note markers is always a tough call. In this case there was a feeling that, given the number of notes in particular sections, it would be distracting to have markers on the actual page. Clearly this would not have been true for you.

4.1.6.5. Convergence not guaranteed. Of course, translation was not always successful, with one member of LibraryThing Group A admitting as much in his response to a request for suggestions of non-American authors in a genre. After making some suggestions, he concluded his reply by saying it "rather depends on your tastes in humour of course…." This illustrates an important caveat of the translation process, that meanings and understandings may still differ between social and information worlds *despite* users trying to reconciling them together— discussing and explaining differences in meaning and understanding—across those worlds and converging a new world as a result. While the thread, Group A, and LibraryThing served a role as a boundary object in this discussion, there was no guarantee that it would be a successful role in every way and at every stage of the translation process, nor that a new community would converge from the process.

4.1.6.6. Note on frequency. As a final note on translation, three of the groups— Goodreads Groups F and H and LibraryThing Group A—featured a plurality (and near majority) of the examples seen in the data, showing clear signs of being more encouraging and welcoming of the process and of this form of discussion. Two of these groups—Groups A and H—were

more overtly international in their make-up than others, and one—Group F—had a strong moderator who was engaged and invested in the success, coherence, and convergence of the group.

4.1.7. Organizations

4.1.7.1. Emergent. Few emergent organizations were seen; when they did occur, they were often due to the efforts of boundary-spanning individuals. For example (and as mentioned in section 4.1.3.1), when mentioning a particular book a user of LibraryThing Group B related that another group was reading it and linked to the group. The thread on the other group served as an emergent organization for this group read, crossing (or at least trying to cross) the boundaries of the established groups and organizations of the digital library (albeit remaining within its broader scope). Other group reads and a reading challenge that occurred could be considered semi-emergent organizations, as not all members of a group would participate and they might draw in other users who are not or who would not consider themselves members. The degree of emergence in most of these cases is small, and most relate to the existing organization of a given group.

4.1.7.2. Existing. References to existing organizations, besides the group a thread was part of, were a little more common, but still infrequent. Users referred to organizations such as online and brick-and-mortar booksellers, publishers, libraries, audiobook providers, blogs, and LibraryThing and Goodreads themselves; these served as sites for information behavior and activities (see section 4.1.2 on sites, above). References to organizations—in particular, a given publisher—were most common in LibraryThing Group D, associated with that publisher; such references were expected. Other, more unique examples of organizations mentioned that did not serve as sites (in social world terms) for users' activities included the Pulitzer Prize for Fiction jury, a seller of artwork related to a book series, a set of bloggers working together, a book distributor (as distinct from a publisher), and a television network adapting a series of books.

4.1.8. Open Codes

Three additional open codes were assigned during the analysis process which had not been included in the codebook. These were *other boundary objects*, *boundary spanner*, and *outsiders*.

4.1.8.1. Other boundary objects. There were quite frequent invocations of other objects as boundary objects that played an important role in the social and information worlds of

LibraryThing and Goodreads users. Some were existing sites, technologies, or organizations (in social world terms; see sections 4.1.2, 4.1.3, and 4.1.7). For example, in a LibraryThing Group B discussion about audiobooks two web sites for audiobook providers became the discussion topic, with their various merits discussed and related and a site (and its associated organization) becoming important to the information behavior and activities of users posting in the thread. The sites served as boundary objects between the communities of the group and thread and the community and organization of these providers, with the LibraryThing thread acting as an emergent site for discussion and translation of users' meanings around and understandings of these objects.

In LibraryThing Group D, started by and facilitated by a publisher, the publisher themselves often acted as a boundary object or boundary spanner, since they edited and published books that users of the group, in at least one instance, discussed the layout and appearance of. In another discussion within Group D, the process of getting "Early Reviewer" books via LibraryThing (before they are available to the general public) became a boundary object for brief discussion, with a representative of the publisher stating "I think that LibraryThing gets the advance copies from our distributor…." In another thread in LibraryThing Group E, TV networks served as organizations and boundary objects in a discussion of adaptations of fiction as TV series.

Other web sites and online resources became boundary objects when they were posted as sources of information that then underwent a socially constructive process of sense- and meaning-making, helping a community understand them individually and collectively. A newsletter—which was not specified to be offline / print or online / digital—served as a boundary object in another discussion. While not quite the same kind of resource, a quiz posted in LibraryThing Group C was socially constructed (and deconstructed) in the ensuing discussion of users' individual and collective performance on it. Technologies could serve a similar role, as in short discussions about e-book readers and MP3 players.

Books served as other boundary objects in threads where a particular novel was the focus of discussion; users would discuss and translate their understanding of the book's plot and characters and their valuing of them. Books could serve as boundary objects between smaller groups of users when they were suggested by one user to be of interest to one or more others. In

one case from Goodreads Group H, the nature and medium of a book as a boundary object changed over the course of the discussion:

Rosa: I'd love to read this one but I'm afraid I do not have access to it. If anybody is willing to lend it to me, I'd appreciate it :)

Sandi: I'm almost sure you can find it at the library, or at a thrift shop. :-?

Rosa: It's not at the library :(

Sandi: Or if you have an e-reader, or the Amazon Kindle for PC, you can download it and read it in digital format.

This book first changed from one that Rosa would borrow from another member of Group H, to one she could borrow from the library or buy from a thrift shop. Then, in Sandi's last response, the medium of the book changed from a printed book to a digital one.

In another intriguing case from LibraryThing Group E, the British English language became a boundary object of importance to the information behavior and activities of users, as a thread was started to determine the meaning of an idiom used by a British author (as mentioned earlier in this chapter). In this discussion other potential boundary objects were raised in users' explanations or educated guesses.

4.1.8.2. Boundary spanners. Users or other individuals would, on occasion, act as boundary spanners between social and information worlds. While such occurrences were less common than other boundary objects serving this role, they still contributed to the role of LibraryThing and Goodreads in the social and information worlds of at least a few users. In many of these cases the boundary spanning was between two groups in LibraryThing or Goodreads; a user frequenting both groups could make comments about one group's activities and information behavior in another group, e.g. "I believe the [horror] group's about to tackle it [as a group read]," and "I'll start this off with [book suggestion], which I'm reading for the International Readers theme read on 20th century Germany." The conversation between Mia and Jared on German war literature (see section 4.1.3.2 above) showed Jared acting as a boundary spanner between Mia's own information world, that of Goodreads Group G where they were posting, and the German Literature group found elsewhere on Goodreads.

Boundary spanning occurred when members of a group would invite new members to join, or new members had seen mention of the group elsewhere. These new members would then explain this in their introduction messages, such as one who posted "I'm very glad I found you,

so I have to thank Terry for unknowingly pointing me in this direction :)"; and another who stated she "got invited by Rosa here :D" and expressed her thanks: "I'm glad she did, this looks like an active group." A related case was when one user introduced another to a book and claimed to have introduced his significant other to a book series, with a similar introductory element present in the boundary spanning.

One final case of boundary spanning occurred when a publisher's representative, in LibraryThing Group D that was started and facilitated by the publisher, explained some factors in how they format endnotes and footnotes in their books. The representative served as a boundary spanner and translator between the publisher's information world and Group D's information world.

4.1.8.3. Outsiders. People and animals who were not members of the group or of the community most germane to a message were mentioned on a few occasions, with the open code "outsiders" applied in these cases. The animal cases—in the majority—were all in LibraryThing Group C and all in reference to the ability of cats to disrupt individual and group activities: a "new kitten says no" to finishing a book by a certain date, and a "senior cat" requiring "emergency surgery" leading to group discussion (see sections 4.1.2 and 4.1.5 above for more on the latter). Cases of people as outsiders included a "stepfather [who] recommended we move a few of the bookshelves into the garage." After the user, a member of Goodreads Group H, asked where the books would go, she said that the stepfather "gave [her] a really weird look, then walked away." The stepfather is seen as someone who does not understand the book-loving culture present in Group H and in Goodreads as a whole. Another case is of a former insider. A former member of LibraryThing Group C, Melanie, was referred to as "Mel" by one user, AJ, who stated she had reminded him of something which he contributed to the thread, implicitly on her behalf. When another user asked who she was, a third user responded that "Mel (melanie123) is AJ's daughter. She's in college now and not around as much." Melanie was an outsider to the current makeup of the group-as-community, despite still being a member of Group C for the purposes of LibraryThing (i.e. as determined by the system and technology).

4.2. Survey

The research design for the survey phase of the study was reviewed in section 3.5. Using the groups sampled from the content analysis phase (see sections 3.4.2 and 3.5.2), users of the five LibraryThing groups and four Goodreads groups were invited to complete the survey

following the procedures given in sections 3.5.2 and 3.5.5, with further details of this process given below. The survey was pretested prior to the main survey phase beginning; see section 3.5.5.1 for discussion of this. After the survey completion period was over, quantitative analysis of the findings was conducted using SPSS using descriptive, inferential, and nonparametric statistics as appropriate (see section 3.5.6 and further details below). The survey instrument that was used is included in Appendix B.

Invitations to take the survey were posted on August 26th, 2013 to the nine groups selected—five in LibraryThing, four in Goodreads—and sent in private messages to 113 LibraryThing members (one member in the sample from the content analysis did not allow sending of private messages and could not be included). Reminders were posted on September 9th and September 23rd; the survey was closed on October 7th. During the six weeks the survey was open, 264 users started the survey, with 163 completing it to the end (a completion rate of 61.7%). Of these, 99 were users of LibraryThing, while 64 were users of Goodreads. 78.5% of surveys were started or completed during the first two weeks of the time period; all but nine (94.5%) were completed during the first four weeks. Once incomplete responses and responses from users who did not fit the age criteria for the study (between 18 and 65 years old) were removed, a total of $N = 142$ survey responses—94 from LibraryThing users and 48 from Goodreads users—were kept as usable for analysis. Ten $25 gift cards were distributed to seven LibraryThing users and three Goodreads users, selected at random, on November 8th; all ten users chose to receive Amazon.com gift cards.

Due to the nature of the sampling and invitation methods, response rates cannot be confirmed. While group membership numbers totaled 7,875 for the four Goodreads groups and 8,935 for the five LibraryThing groups at the time of the survey, it is possible not all of these members saw an invitation message, and visitors to the groups who are not members and not included in these counts did see the message and respond. Since usernames were not requested, calculating response rates for that sample is impossible. Since sampling was not purely random—users could choose to participate or not and not all users of the nine groups were guaranteed to see the invitation to participate—relying on traditional inferential statistics—given that they assume a representative sample obtained through simple random sampling—to infer beyond the sample (i.e. the participating users) is not possible. Selection bias—a form of sampling bias—may have generated results that are not fully representative, but one may assume

that survey respondents are at least moderately representative of the population of users of the nine LibraryThing and Goodreads groups. If such an assumption is true, conclusions can be inferred about users in these nine groups. Nonparametric statistics are included and used to strengthen these inferences and findings. These are accepted as limitations of this exploratory study (see also section 5.4).

The following subsections present analysis of the reliability of the scales for each phenomenon of interest under the theoretical framework; a summary of participants' demographic and background characteristics; analysis of relationships between demographics, background, and the phenomena of interest under the theoretical framework; and analysis of the phenomena in relation to one another and to the two case studies. Since not all participants answered every survey question, effective sample sizes at each stage and for each result are stated.

4.2.1. Scale Reliability

The Likert scales from the survey, as constructed (see section 3.5.4 and Appendix B), were analyzed to determine the internal consistency and reliability of the scales via Cronbach's alpha. As per the procedures related by George and Mallery (2010), individual items were dropped from a scale where their removal would increase the Cronbach's alpha for and the reliability of the overall scale. The results of this procedure are shown in Table 4.1, which shows the numbers of items that were dropped (refer to the survey instrument in Appendix B, section B.1 for details) and the resulting scale reliability, based on common cutoffs for Cronbach's alpha discussed by George and Mallery (2010).

All scales reached at least the level indicating "acceptable" reliability (a Cronbach's alpha of at least 0.7; see George & Mallery, 2010), with the exception of Boundary Objects and Information Value. While the value for the latter, 0.697, fell below the 0.7 cut-off, it was so close that it was decided to keep the scale in further analysis, while keeping in mind that the scale might be of questionable reliability. Due to the "poor" resulting reliability—even when an item was dropped—shown by the Cronbach's alpha of 0.520, the Boundary Objects scale was dropped altogether from further analysis. It may be that the concept of a boundary object is too difficult to convey in five items, as tried here. In the theoretical framework the other concepts measured relate to the concept of a boundary object, one with a strong, clear role that can be considered successful. One might argue that the concept has adequate measurement through the

Table 4.1: *Likert Scale Reliability Results*

Scale	Initial alpha	Item(s) dropped	Final alpha	Scale reliability
Boundary Objects	0.481	4	0.520	Poor
Translation	0.707	*None*	0.707	Acceptable
Coherence / Convergence	0.749	*None*	0.749	Acceptable
Social Norms	0.734	*None*	0.734	Acceptable
Social Types	0.735	4	0.745	Acceptable*
Information Value	0.697	*None*	0.697	Questionable
Information Behavior and Activities	0.773	4, 5	0.823	Good
Organizations	0.730	*None*	0.730	Acceptable
Sites	0.729	*None*	0.729	Acceptable
Technologies	0.785	4	0.829	Good*

Note: As measured using Cronbach's alpha and procedures from George and Mallery (2010).
* These final scales are of only three items. While it is normal to try for scales consisting of at least four items, in these cases the improvement in Cronbach's alpha was considered worthwhile. The four-item scales for these concepts were included in parts of the further analysis for comparison, but no substantial differences in the results and findings were observed.

combination of the other scales. Other qualitative methods of determining if LibraryThing or Goodreads played roles as a boundary object for a given participant could be useful; the follow-up interviews included in this study explicitly allowed for this possibility.

The final scales are given in Appendix B section B.2, after the initial survey instrument. Averages were calculated for these scales for each participant by summing the scores on each Likert scale item and then dividing by the total number of items. These were then used in further analyses, as related in sections 4.2.3 and 4.2.4.

4.2.2. Demographic and Background Characteristics

4.2.2.1. Gender. More participants were female than male; 86 (or 59.3%) reported their gender as female, while 51 (or 35.2%) reported male ($n = 139$); one participant reported other gender, while one declined to respond to this question. Differences were observed in the gender

distribution of participants from LibraryThing vs. Goodreads. For LibraryThing, 40 (or 43.5%) reported to be male and 51 (or 57.3%) to be female, with 1 (or 1.1%) reporting other gender; for Goodreads, 11 (or 17.0%) reported to be male and 35 (or 76.1%) to be female, with 0 reporting other gender. Chi-square analysis suggests that such a difference is meaningful (if the participant who reported other gender is ignored; $\chi^2(1) = 5.253$, $p = 0.022$), although this finding is limited to the sample and inference to the nine groups assumes representativeness.

4.2.2.2. Age. Participants ranged from 18 to 64 years old, with a mean of $M = 42.12$ years old and a standard deviation (SD) of 12.50 ($n = 141$); the median age was 42. Age distribution differed significantly between participants from the two digital libraries, as determined via an independent-samples t-test and an independent-samples Mann-Whitney U test. Goodreads participants ($M = 38.48$, $SD = 12.12$, median = 38, $n = 48$) were found to be younger ($t(137) = 2.540$, $p = 0.012$; for Mann-Whitney, $Z = -2.504$, p = 0.012) by an average of 5.55 years than LibraryThing participants ($M = 44.03$, $SD = 12.33$, median = 45, $n = 91$).

4.2.2.3. Education. Of the 140 participants who reported their educational level, most had completed at least a bachelor's degree, but many educational experiences were reported (see Table 4.2). No meaningful differences were observed in educational level between participants from the two digital libraries; chi-square analysis—limited to the sample and with inference beyond that level assuming representativeness—did not find any significant differences.

Table 4.2: *Educational Level of Survey Participants*

Level	Number	Percentage
Less than high school (or equivalent)	1	0.7%
High school diploma (or equivalent)	16	11.3%
Associate's (two-year) degree	8	5.7%
Bachelor's (four-year) degree	53	37.6%
Master's degree	36	25.5%
Professional degree (JD, MD, etc.)	11	7.8%
Doctoral degree (PhD, EdD, etc.)	8	5.7%
Other	7	5.0%
Prefer not to answer	1	0.7%

Note: n = 141

4.2.2.4. Use of the Internet. Participants spent an average of 27.82 hours (or about 27 hours and 49 minutes) on the Internet each week ($n = 139$, $SD = 16.43$); the median number of hours was 21 with a mode of 20 hours. Participants ranged from 5 to 100 hours of Internet use per week. Differences were observed between LibraryThing and Goodreads participants in their Internet use, but an independent-samples Mann-Whitney U test analysis showed this was not significant. If the samples are assumed to be representative, an independent-samples t-test analysis finds this difference significant: Goodreads participants ($M = 32.58$, $SD = 21.54$, median = 25, $n = 48$) may use the Internet somewhat more during an average week than LibraryThing participants ($M = 25.31$, $SD = 12.38$, median = 21, $n = 91$; $t(137) = -2.160$, $p = 0.035$), on average 7.28 hours more in this sample. Since sampling was not purely random, inference of this result beyond the sample requires assuming the sample is representative, and inference beyond the nine groups is impossible.

4.2.2.5. Use of the digital library. Of hours spent on the Internet each week, participants reported spending an average of 7.65 of those (or about 7 hours and 39 minutes) per week using the digital library in question ($n = 140$, $SD = 7.52$); the median number of hours spent on LibraryThing or Goodreads was 5 with a mode of 2 hours. Hours spent using the digital libraries per week ranged from 0 to 40; one can assume values of 0 reflect a few minutes per week at best, given all participants had used LibraryThing or Goodreads at least long enough to see the survey invitation. Significant differences were found between LibraryThing and Goodreads participants; analysis through an independent-samples t-test and an independent-samples Mann-Whitney U test showed the latter used Goodreads more during an average week ($M = 9.83$, $SD = 8.98$, median = 7, $n = 48$) than the former used LibraryThing ($M = 6.51$, $SD = 6.40$, median = 5, $n = 92$; $t(138) = -2.283$, $p = 0.025$; Mann-Whitney $Z = -2.340$, p = 0.019), on average 3.33 hours more and with a median difference of 2 hours.

4.2.2.6. Use of groups. Not all of this time was spent using the groups feature; participants reported spending an average of 5.20 hours (or about 5 hours and 12 minutes) per week in groups ($n = 139$, $SD = 6.00$), with a median of 3 hours and a mode of 1 hour. As with hours spent using the digital libraries, hours spent in groups per week ranged from 0 to 40. No significant differences were found between participants from LibraryThing and Goodreads in their use of their respective digital library's groups, based on an independent-samples t-test and an independent-samples Mann-Whitney U test.

139

4.2.2.7. Use of other social media sites and services. The survey asked participants about their usage of other social media sites and services (*n* = 126 for all questions in this section). This data is shown in Table 4.3. Participants made significant use of Facebook (81.7% of participants); Twitter and blogging sites (e.g. WordPress, Blogger) were used by at least a third of participants (35.7% and 34.1% respectively). Most other sites and services asked about were used by at least 10% of participants, including Goodreads (if a LibraryThing user) and LibraryThing (if a Goodreads user). Exceptions included competitor site Shelfari (4.8%) and location-based social networking site Foursquare (4.0%).

Comparing these numbers with recent Internet user population data from the Pew Research Center's Internet and American Life Project (Duggan & Smith, 2013) indicates that the LibraryThing and Goodreads users surveyed are more likely to use Facebook (81.7% vs. 71%) and Twitter (35.7% vs. 18%); they use Pinterest (25.4% vs. 21%) and LinkedIn (23.8% vs 22%) at similar rates to the general population, and Instagram at a lower rate than the general population (12.7% vs 17%). (Use percentages for Foursquare are too small to allow for meaningful comparison; see Zickuhr, 2013). These findings are, of course, limited to the users surveyed and may or may not reflect LibraryThing and Goodreads users as a whole.

Table 4.3: *Use of Other Social Media Sites by Survey Participants*

Site	Number	Percentage
Facebook	103	81.7%
Twitter	45	35.7%
Blogging (e.g. WordPress, Blogger)	43	34.1%
Pinterest	32	25.4%
LinkedIn	30	23.8%
Google Plus	24	19.0%
Instagram	16	12.7%
Goodreads / LibraryThing	16	12.7%
Flickr	13	10.3%
Shelfari	6	4.8%
Foursquare	5	4.0%

Note: n = 126

Contingency tables comparing use of each social media site and the digital library used show few meaningful relationships between which of the digital libraries participants use and use of each social media site; while Facebook, Twitter, Shelfari, Foursquare, and Pinterest use are more frequent among participants from Goodreads ($n = 46$), and Google Plus, LinkedIn, blogging service, and Flickr use more frequent among participants from LibraryThing ($n = 80$), the differences are slight and small. The difference is somewhat more pronounced for Instagram—19.6% of Goodreads participants use it, vs. 8.8% of LibraryThing participants—but the number of users (9 and 7, respectively) is small enough to limit the meaningfulness of this difference. The difference in use of the *other* digital library (i.e. Goodreads by LibraryThing participants and LibraryThing by Goodreads participants) is more pronounced and meaningful: 17.5% of LibraryThing participants (or 14 users) also use Goodreads, while 5.8% of Goodreads participants (or 2 users) also use LibraryThing; these numbers are not substantial, but the difference is much greater. Chi-square tests further suggest this is meaningful and give potential evidence of a relationship ($\chi^2(1) = 4.557$, $p = 0.033$), but inferring this is true among all members of the nine groups requires assuming a representative sample, and inference to the broader population of all LibraryThing and Goodreads users is not possible.

4.2.3. Demographic and Background Relationships

Independent samples Kruskal-Wallis, median, and Mann-Whitney U test analyses were used as appropriate to examine potential relationships between each continuous demographic or background variable and the phenomena of interest under the theoretical framework introduced in Chapter 2, for those scales that were considered reliable (see section 4.2.1 above). Inference of these results may apply to the population of users of the five LibraryThing and four Goodreads groups, if the samples are assumed to be representative of those users with minimal selection bias.

4.2.3.1. Age. When ages were grouped into categories (each category spanning five years), age was found to be significantly related to information value via the median test for independent samples ($\chi^2(9) = 26.014$; $p = 0.002$; $n = 136$) and an independent-samples Kruskal-Wallis test ($\chi^2(9) = 18.833$; $p = 0.027$; $n = 136$). Younger participants tended to give a higher rating on information value than older participants, with the distribution of these ratings differing by age group. Age was found to be significantly related to technologies via an independent-samples Kruskal-Wallis test ($\chi^2(9) = 19.951$; $p = 0.018$; $n = 135$), implying differences in the

distribution of technology scores across age groups. The median test for independent samples was not significant ($p = 0.067$). Examination of the median rating for technology per age group shows few major differences beyond the two youngest groups (18-27 years old), who rated lower on technology, but not significantly so. No other relations were found between age and the phenomena of interest.

  4.2.3.2. Education. A significant relation was found between education level and information behavior and activities, using the median test for independent samples for analysis ($\chi^2(6) = 13.589$; $p = 0.035$; $n = 128$); the median rating given for information behavior and activities decreases as education level increases. An independent-samples Kruskal-Wallis test was not significant ($p = 0.096$), implying the overall spread and shape of the distribution of ratings is similar at all levels of education. No other relations were found between education level and the phenomena of interest.

  4.2.3.3. Hours of use. When responses for the number of hours spent on the Internet, on LibraryThing or Goodreads, and in groups in the two digital libraries were grouped into categories (in groups of four, three, and three hours, respectively), many relationships were found with the phenomena of interest. The statistical analyses are summarized in Table 4.4. Significantly higher ratings—based on median tests for independent samples—were given by those who spent longer using the digital library each week for a sense of shared organizations ($\chi^2(9) = 17.735$; $p = 0.038$), and by those who spent longer in groups each week for translation ($\chi^2(9) = 20.404$; $p = 0.016$) and a sense of shared organizations ($\chi^2(9) = 18.142$; $p = 0.034$); higher ratings were most observed among heavy users of each digital library and of the groups features. Among users who spent different lengths of time on the Internet each week, different distributions of ratings were observed—based on independent-samples Kruskal-Wallis tests—for coherence and convergence ($\chi^2(13) = 23.975$; $p = 0.031$). Among users who spent different lengths of time using the digital library each week, different distributions of ratings were observed for translation ($\chi^2(9) = 20.706$; $p = 0.014$), a sense of shared organizations ($\chi^2(9) = 22.442$; $p = 0.008$), and shared technology use ($\chi^2(9) = 18.303$; $p = 0.032$). Among users who spent different lengths of time in groups each week, different distributions of ratings were observed for translation ($\chi^2(9) = 25.583$; $p = 0.002$), coherence and convergence ($\chi^2(9) = 17.347$; $p = 0.044$), and a sense of shared organizations ($\chi^2(9) = 22.317$; $p = 0.008$).

Table 4.4: *Hours Spent Online by Survey Participants Versus Phenomena of Interest*

	Hours on Internet	Hours on LT / GR	Hours in groups
Translation	*NS*	Distribution differs $\chi^2(9) = 20.706$ $p = 0.014$ *	Medians differ $\chi^2(9) = 20.404$ $p = 0.016$ * Distribution differs $\chi^2(9) = 25.583$ $p = 0.002$ **
Coherence / Convergence	Distribution differs $\chi^2(13) = 23.975$ $p = 0.031$ *	*NS*	Distribution differs $\chi^2(9) = 17.347$ $p = 0.044$ *
Social Norms	*NS*	*NS*	*NS*
Social Types	*NS*	*NS*	*NS*
Information Value	*NS*	*NS*	*NS*
Information Behavior and Activities	*NS*	*NS*	*NS*
Organizations	*NS*	Medians differ $\chi^2(9) = 17.735$ $p = 0.038$ * Distribution differs $\chi^2(9) = 22.442$ $p = 0.008$ **	Medians differ $\chi^2(9) = 18.142$ $p = 0.034$ * Distribution differs $\chi^2(9) = 22.317$ $p = 0.008$ **
Sites	*NS*	*NS*	*NS*
Technologies	*NS*	Distribution differs $\chi^2(9) = 18.303$ $p = 0.032$ *	*NS*

* $p < 0.05$; ** $p < 0.01$; *NS* = not significant ($\alpha = 0.05$)

4.2.3.4. Social networking sites and services. Many significant relationships were observed between use of social networking sites and services and the phenomena of interest, as determined through analysis via independent-samples Mann-Whitney U tests. Facebook use was found to be significantly related to information behavior and activities ($Z = -3.093$; $p = 0.002$); among those surveyed, those that use Facebook are more likely to engage in shared information behavior and activities ($M = 3.77$, $SD = 0.579$, median = 3.75, $n = 100$) than those who do not use Facebook ($M = 3.29$, $SD = 0.658$, median = 3.50, $n = 21$). Use of Google Plus was found to be significantly related to social norms ($Z = -1.974$; $p = 0.048$); among those surveyed, those that use Google Plus are less likely to share a sense of social norms ($M = 3.57$, $SD = 0.456$, median = 3.60, $n = 20$) than those who do not use Google Plus ($M = 3.79$, $SD = 0.537$, median = 4.00, $n = 95$). LinkedIn use was close to being significantly related to organizations, with a lower sense of shared organizational elements observed among participants who use the site than among those who do not, but this difference did not quite meet the required significance level ($p = 0.051$).

Use of the competing site (i.e. Goodreads for LibraryThing users, and LibraryThing for Goodreads users) significantly related with shared social types ($Z = -3.062$; $p = 0.002$), which were lower for such users ($M = 2.46$, $SD = 0.619$, median = 2.33, $n = 16$) than other users ($M = 3.02$, $SD = 0.686$, median = 3.00, $n = 107$). Only two users of Goodreads used LibraryThing, hampering further analysis by digital library.

Use of Pinterest was found to be significantly related to coherence / convergence ($Z = -1.984$; $p = 0.047$), social norms ($Z = -2.072$; $p = 0.038$), and sites ($Z = -2.038$; $p = 0.042$); among those surveyed, those who use Pinterest share higher levels of coherence and convergence ($M = 4.01$, $SD = 0.493$, median = 4.00, $n = 30$), sense of shared social norms ($M = 3.91$, $SD = 0.556$, median = 4.00, $n = 28$, and stronger feelings of the digital library they use acting as a common site ($M = 4.16$, $SD = 0.473$, median = 4.10, $n = 29$) than those who do not use Pinterest ($M = 3.75$, $SD = 0.612$, median = 3.75, $n = 92$; $M = 3.69$, $SD = 0.511$, median = 3.80, $n = 87$; and $M = 3.92$, $SD = 0.545$, median = 4.00, $n = 91$, respectively).

Use of Flickr was found to be significantly related to four factors: (a) translation ($Z = -2.639$; $p = 0.008$), with ratings higher for Flickr users ($M = 4.27$, $SD = 0.436$, median = 4.33, $n = 11$) than non-users ($M = 3.87$, $SD = 0.517$, median = 3.83, $n = 104$); (b) social types ($Z = -2.027$; $p = 0.043$), with ratings higher for Flickr users ($M = 3.18$, $SD = 0.480$, median = 3.00, $n = 11$) than non-users ($M = 2.92$, $SD = 0.705$, median = 3.00, $n = 104$); (c) organizations ($Z = -2.299$; p

= 0.022), with ratings higher for Flickr users ($M = 4.23$, $SD = 0.575$, median = 4.25, $n = 11$) than non-users ($M = 3.83$, $SD = 0.638$, median = 4.00, $n = 104$); and (d) technologies ($Z = -2.205$; $p = 0.027$), with ratings higher for Flickr users ($M = 4.09$, $SD = 0.870$, median = 4.00, $n = 11$) than non-users ($M = 3.69$, $SD = 0.726$, median = 3.67, $n = 104$). The small proportion of Flickr users among participants in this study ($n = 11$) restricts further the potential for these findings to be transferable to other groups of users beyond those who took part in this survey.

4.2.4. Roles of Phenomena of Interest

Through independent-samples Mann-Whitney U test analyses, differences in a couple of the phenomena of interest were found between the two sites. Goodreads users rated their sense of shared information value judgments significantly higher than LibraryThing users (Mann-Whitney $Z = -3.021$, $p = 0.003$); on average, Goodreads users ($M = 3.24$, $SD = 0.660$, median = 3.25, $n = 48$) rated 0.403 higher per scale item (indicating more agreement with each item) than LibraryThing users ($M = 2.84$, $SD = 0.722$, median = 2.88, $n = 92$). Goodreads users rate their sense of shared information behavior and activities significantly higher than LibraryThing users (Mann-Whitney $Z = -2.293$; $p = 0.022$); on average, Goodreads users ($M = 3.78$, $SD = 0.730$, median = 4.00, $n = 48$) rated 0.240 higher per scale item (indicating more agreement with each item) than LibraryThing users ($M = 3.54$, $SD = 0.676$, median = 3.75, $n = 90$).

Descriptive statistics were analyzed for the phenomena of interest. These are reported in Table 4.5, with results from Wilcoxon signed rank tests to determine if the median rating is significantly different from 3 (a neutral value representing neither equal proportions of agreement and disagreement with the statements). Ratings on most of the phenomena of interest were found to be significantly above this value, indicating significantly more agreement than disagreement, with two exceptions: social types (median = 3.000, $p = 0.323$) and information value (median = 3.000, $p = 0.709$). While not as appropriate given the lack of simple random sampling, parametric testing using independent-samples t-tests to test for means different from 3 produced similar results.

Kendall's τ correlations were computed among the nine scale averages that were found to be valid in the earlier validity analysis. These are reported in Table 4.6. Most correlations were significant (ps < 0.01), but three were notable in their non-significance: translation vs. information value ($\tau = -0.003$, $p = 0.958$), technologies vs. information value ($\tau = 0.082$, $p = 0.201$), and organizations and information value ($\tau = 0.046$, $p = 0.467$). While significant, the

Table 4.5: *Descriptive Statistics for Phenomena of Interest for Survey Participants*

	Sample size (n)	Mean	Median	SD
Translation	140	3.882	3.833 ***	0.547
Coherence / Convergence	139	3.733	3.750 ***	0.667
Social Norms	140	3.736	3.800 ***	0.550
Social Types	140	2.945	3.000 NS	0.748
Information Value	140	2.975	3.000 NS	0.725
Information Behavior and Activities	138	3.620	3.750 ***	0.702
Organizations	138	3.824	4.000 ***	0.694
Sites	137	3.939	4.000 ***	0.589
Technologies	139	3.659	3.666 ***	0.831

*** $p < 0.001$; NS = not significant (testing H_0: median = 3; $\alpha = 0.05$)

correlation between social norms and social types ($\tau = 0.129$, $p = 0.044$) and information value and sites ($\tau = 0.139$, $p = 0.028$) were weaker ($0.01 < p < 0.05$) in comparison to the other significant correlations. Values for correlations using Spearman's ρ were higher (implying stronger correlations when using that measure), but no major significance level differences were observed when compared with the Kendall's τ values presented in Table 4.6.

4.3. Interviews

The research design for the interview phase of the study was reviewed in section 3.6. The interview instrument was pretested prior to the main interview phase beginning; see section 3.6.3.1 for discussion of this. Interviewees were purposively sampled from survey participants, following the procedures in sections 3.6.3 and using an interview instrument and guide constructed as discussed in section 3.6.4. The interview instrument used to guide the semi-structured interviews is included in Appendix C. Once interviewees had agreed to an interview and a date and time had been set, the collection of interviews took place following the procedures discussed in section 3.6.5. After interviews had been transcribed, qualitative analysis of interview transcripts proceeded as mentioned in section 3.6.6, using the codebook and associated procedures provided in section 3.7.

A total of 48 potential interviewees were purposively sampled based on the survey findings and contacted, of which 36 were sent a second reminder invitation prior to saturation

Table 4.6: *Kendall's τ Correlations for Scale Averages for Phenomena of Interest*

	Translation	Coherence / Convergence	Social Norms	Social Types	Information Value	Info Behavior and Activities	Organizations	Sites	Technologies
Translation									
Coherence / Convergence	0.436 **								
Social Norms	0.194 **	0.407 **							
Social Types	0.217 **	0.289 **	0.129 *						
Information Value	0.003 NS	0.197 **	0.231 **	0.209 **					
Info Behavior and Activities	0.215 **	0.441 **	0.391 **	0.248 **	0.253 **				
Organizations	0.399 **	0.432 **	0.234 **	0.290 **	0.046 NS	0.270 **			
Sites	0.445 **	0.531 **	0.307 **	0.252 **	0.139 *	0.399 **	0.564 **		
Technologies	0.336 **	0.415 **	0.266 **	0.308 **	0.082 NS	0.268 **	0.547 **	0.586 **	

* $p < 0.05$; ** $p < 0.01$; *NS* = not significant ($\alpha = 0.05$)

being reached. From the 48 contacted, a total of $N = 11$ participants responded and were interviewed from January 13th to March 26th, 2014. $n = 7$ interviews took place with LibraryThing users and $n = 4$ took place with Goodreads users, a similar proportion as in the survey responses. Four of these interviewees responded after receiving a second reminder invitation; one potential interviewee responded after receiving a second reminder invitation and was scheduled for an interview, but then was not contactable at the time of their interview and did not respond to requests to reschedule. Full details of sampling and interview procedures can

be found in Chapter 3, section 3.6. The average interview length was 50 minutes and 33 seconds, with the median interview length being 50 minutes and 3 seconds. The shortest interview was 34 minutes and 46 seconds; the longest, 60 minutes and 47 seconds. Six interviews were conducted via phone (with phone calls made through Google Voice and Google Hangouts), four interviews via Skype, and one interview via FaceTime; no interviewees chose Google Hangouts as their medium of choice.

Intracoder reliability testing was conducted using two of the interview transcripts (about 20% of the interview data), after the remainder of the data analysis was completed. These transcripts were selected at random; both were with LibraryThing users. This testing produced an average of 96.3% agreement on codes applied, with a Cohen's kappa of $\kappa = 0.7374$. Such a value is considered to represent "substantial" ($0.60 < \kappa < 0.80$; Landis & Koch, 1977) or "fair to good" ($0.40 < \kappa < 0.75$; Fleiss, 1981) agreement in coding. Brief review of those codes and sources where agreement was not "substantial" ($\kappa < 0.60$) on Landis and Koch's scale indicated most disagreements were on whether a code applied to an existing world, an emergent world, or both; or the degree to which a code applied, such as whether the digital library was an influential, standard boundary object for an emergent social and information world, or a place where information behavior and activities and technology use happened, without much influence. As with the content analysis, some variation in the codes applied and in the relative significance of codes is understandable, given the different knowledge held during initial analysis of the interviews versus once all data analysis was complete. The time difference was less than in the content analysis, which may have contributed to the better agreement.

The interviews provided the richest source of data in this study. Before the results of the interviews are reported in detail, section 4.3.1 below provides a summary, based on the survey findings, of the demographics and background characteristics of the interviewees and their Likert scale ratings for the phenomena of interest. Then, the remaining sections cover detailed results of relevance to each of the phenomena of interest under the theoretical framework. (As with the content analysis results, names and other information that could identify participants were changed to protect the confidentiality of users. Refer to section 4.1 for details.)

4.3.1. Demographic and Background Characteristics of Interviewees

Comparing means and medians for interviewees vs. survey takers on the phenomena of interest, no major differences are observed (see Table 4.7). Social norms, social types,

Table 4.7: *Descriptive Statistics for Phenomena of Interest for Interviewees*

	Interviewees		All survey takers		
	Mean	Median	Mean	Median	Sample size
Translation	3.894	3.667	3.882	3.833	(*n* = 140)
Coherence / Convergence	3.455	3.750	3.733	3.750	(*n* = 139)
Social Norms	3.418	3.400	3.736	3.800	(*n* = 140)
Social Types	2.788	3.000	2.945	3.000	(*n* = 140)
Information Value	2.795	2.750	2.975	3.000	(*n* = 140)
Information Behavior and Activities	3.409	3.500	3.620	3.750	(*n* = 138)
Organizations	3.636	3.750	3.824	4.000	(*n* = 138)
Sites	3.673	3.800	3.939	4.000	(*n* = 137)
Technologies	3.455	3.667	3.659	3.666	(*n* = 139)

Note: For interviewees, $N = 11$; for all survey takers, $N = 142$.

information value, information behavior and activities, organizations, and sites were all rated less (indicating less agreement) by interviewees when comparing means and medians, although differences were minor; interviewees rated their agreement with statements on coherence and convergence and on technologies a bit lower on average, but medians were the same. Interviewees were more likely to be female, older, and have a bachelor's degree or better; they used the digital library in question (LibraryThing or Goodreads) and the groups feature a little more often; and they were a little less frequent in their use of the Internet (see Table 4.8). Interviewees were less likely to use Facebook, Instagram, and Twitter; they were more likely to use blogging services, Pinterest, LinkedIn, and Google Plus. Use of the other digital library (Goodreads for LibraryThing users, and vice versa), Flickr, Shelfari, and Foursquare was similar among interviewees to that of all survey takers (see Table 4.9). Due to the small sample size of the interviews, no inferential statistics were used for comparison.

4.3.2. Translation

A moderate amount of translation was mentioned by interviewees. Examples included users trying to come to agreement, getting to know each other, and negotiating and explaining norms and rules. In some cases translation was partial at best.

Table 4.8: *Demographic and Background Characteristics for Interviewees*

	Interviewees (N = 11)	All survey takers (N = 142)	
Digital library	n = 7 LT (63.6%)	n = 94 LT (66.2%)	
	n = 4 GR (36.4%)	n = 48 GR (33.8%)	
Gender	77.9% female	59.3% female	(n = 139)
Age (mean)	48.27 years	42.12 years	(n = 141)
Education	81.8% bachelor's degree or better	76.6% bachelor's degree or better	(n = 141)
Internet use (mean)	27.20 hours	27.82 hours	(n = 139)
Use of the DL (mean)	8.80 hours	7.65 hours	(n = 140)
Use of groups (mean)	5.45 hours	5.20 hours	(n = 139)

Note: For interviewees, N = 11; for all survey takers, N = 142.

Table 4.9: *Use of Other Social Media Sites by Interviewees*

Site	Interviewees	All survey takers
Facebook	6 (66.7%)	103 (81.7%)
Blogging (e.g. WordPress, Blogger)	5 (55.6%)	43 (34.1%)
Pinterest	3 (33.3%)	32 (25.4%)
LinkedIn	3 (33.3%)	30 (23.8%)
Google Plus	3 (33.3%)	24 (19.0%)
Twitter	1 (11.1%)	45 (35.7%)
Goodreads / LibraryThing	1 (11.1%)	16 (12.7%)
Flickr	1 (11.1%)	13 (10.3%)
Instagram	0 (0.0%)	16 (12.7%)
Shelfari	0 (0.0%)	6 (4.8%)
Foursquare	0 (0.0%)	5 (4.0%)

Note: For interviewees, *n* = 9; two interviewees did not answer the survey question on their use of other social media sites. For all survey takers, *n* = 126.

4.3.2.1. Coming to agreement. Translation would often involve users trying to come to agreement on values, norms, or behaviors. In one example, Tanya had a conversation with an author in Goodreads Group G about his book and how it had been categorized in Goodreads:

> An author posted to [Group G] saying that his book had been characterized as modern history and he did not understand why. And I looked at the description on Goodreads and I *also* did not understand why. I told him that I thought that it was urban fantasy.

Then, later in the interview, Tanya looked at the discussion thread and related further details of the ongoing translation process:

> Tanya: I am looking at the thread now, he made a comment in return and, he says that he thinks he has a "Dan Brown" sort of book. And, a "Dan Brown" sort of book makes it a, a *thriller* of some kind. But, and it has a historical *element* in it, apparently. But it also looked like it had a fantasy element from the description.
>
> Adam: Um-hmm. So it sounds like there's a lot of things going on in this book.
>
> Tanya: Yes, yes, it looks like it may be hard … hard to categorize.

This translation process was still going on, since as Tanya stated, "the interaction is not developed enough yet ... for [a] common understanding to have been built." Of course, "readers can classify books any way they like. And they do!" Author disagreement with readers or publishers over meanings and understandings, like this, were mentioned by multiple interviewees.

Another example of users discussing the process of translation came from LibraryThing user Ann:

> We were talking about gender and characters, and someone [brought up] Rich Berlew's *Order of the Stick* [comic]; there's a character in there that is, four, five, six books in, has not been fixed to male or female. … And it's not known, it's absolutely not stated. And if you go hunt up on boards and the rest, everyone's got an opinion.

In this case, the thread Ann was participating in focused the translation at the meta-level, discussing gender roles in fantasy literature with this as one example, instead of trying to reach any shared understanding of the gender of Berlew's character. Others brought in academic perspectives, adding another layer to the translation process. Later in the interview she mentioned that, through the process of having

… five or six people all on, all who've read different kind of books, and some overlapping and so on, you tend to get really quite good coverage. … When you're actually to-ing and fro-ing about examples … it [the conversation] can go quite detailed.

4.3.2.2. Getting to know each other. Translation processes were mentioned as part of users getting to know each other better through their interactions in LibraryThing and Goodreads, as in the following examples from Goodreads users Rachelle and Kevin and LibraryThing user Betty:

Rachelle: That thread lets you get to know the people, and … a lot of the people who post in the random thread also post in the book threads.

Kevin: …[I was] interacting with several new members, learning what interests them and, you know, if they were writing or if they were just interested in, in reading different things.

Betty: …as time went on and there was more interaction, while you did not know people personally, you *did* get a sense of who they work, and sort of felt that you knew them at least a little bit, at least at an acquaintance level, just by virtue of the way they interacted and what they said.

Rachelle: …so you get to know who likes what, who's into Bill Lawne and who liked [Lawne's latest book] but does not like his Japan series, and stuff like that. So you know their book taste as well as some personal stuff that people talk about.

Such translation could, given time, lead to a close-knit community where social ties and relationships were important and common. This had happened to Sam, who related the extended process of translation—and eventual convergence—that he felt had occurred to him within a private LibraryThing group:

Because rules change when you change relationships, right? So you go from a stranger to a friend, and you know, there has to be common understandings, and there are things that you know not to mention to strangers. But by the same token the same happens with friends. You learn about people and you find out that, you know there are certain things that are sensitive topics and so on. So it works that way also.

Sam agreed that a sense of community and commonality had been established through this translation process and the process of establishing relationships with other users of LibraryThing.

4.3.2.3. Norms and rules. Translation could involve group moderators, who in the process of enforcing group norms or LibraryThing and Goodreads' rules would help members understand the rules and their intended meaning. Sometimes established members would be reminded of the rules if they broke them, as Goodreads user Rachelle related:

> …if a longtime member oversteps their bounds ... they do not get, like if you're a longtime member and you're well known, you do not get kicked out right away. You [the moderator] are probably going to be like, "that just sounded a little mean," you know, and the longtime member will be like, "oh, sorry! I did not mean it!"

4.3.2.4. Partial translation. Translation provided for a social element, where users were not just reading and making sense of a novel or other information source themselves, but could discuss it with others to come to an understanding. It was not always the case, though, that such translation could be considered an unqualified success, in the sense of being shared by others. For example, Miriam had started a thread on LibraryThing to discuss illustrations for a popular children's novel from the early 20th century; as part of this thread a discussion came up about what features would be best for illustrations targeted at young children. As Miriam related,

> …we did have a difference of opinion there; somebody thought that the simpler the better, and my thought was that quality is the key, that you can train babies' eyes with good illustrations.

Another perhaps more unusual perspective, from a discussion of reviews of novels, can be found in these firm words from LibraryThing user Jennifer:

> You know, whatever my opinion is, it is, and you can either agree with it or not agree with it. But, you know, most likely I'm not going to change it unless you give me a really good argument, and over a book; but it's subjective, either you like it or you do not. Like, I cannot stand romances, I could not read one to save my soul, like I cannot, I just could not do it; and yet, some other people absolutely love them.

Other comments from Jennifer make it clear that she is willing to read and discuss other people's opinions, values, and thoughts on novels, and engage in a form of partial translation, but based on her comment above it is unlikely that a full and complete understanding, and full coherence (let alone convergence), would occur.

4.3.3. Social Norms

Social norms were one of the most frequent phenomena mentioned or alluded to in the interviews. Interviewees discussed the norms within existing and emergent communities; norms made explicit or left implicit; violations of the norms that led to conflict; made comparison between the norms of communities; and discussed the role of moderators and administrators in enforcing norms.

4.3.3.1. Existing and emergent. Many mentions were made of norms that applied to individuals; emergent threads or groups; broader, pre-existing communities; and to significant elements of society. A full description of each and every norm identified would take up too much space even in a dissertation, so the focus in this section will be on those indicative of the roles played by LibraryThing and Goodreads in users' behaviors and activities and in the social worlds, information worlds, and communities of users.

Some norms were down to individual preferences and practices, within individual users' information worlds and in relation to those of others; these could be construed as normative information behavior (see section 4.3.6):

Tanya:	I post books to Goodreads in order to discuss them, rather than in order to catalog them on Goodreads.
Taneesha:	…one of the reasons I'm on Goodreads [is] because in my real life, I do not know too many people who have the time to read.
Lindsey:	You know, I know there are other book sites, and I've taken a look at them, but because I'm so invested in LibraryThing it does not make sense for me to go somewhere else.

Other norms were emergent, demonstrating groups and threads coming up with written and unwritten rules and culture that changed the role of the digital library for users and the community. One example comes from LibraryThing user Miriam, referring to a group about forgotten turn-of-the-20th-century literature:

> … one of the things that we do is, if we have extra copies of a book … we've got one particular thread that's dedicated to, "hey, does anybody want this? And I'll mail it to you.

This shows the group going beyond the existing norms of society or of LibraryThing to be nice to one another, to the extent of making books available to each other for free and paying for

postage. Many LibraryThing interviewees shared similar views of their groups and stated there was a clear welcoming, courteous culture; this emerged more in some groups than others. Users of Goodreads felt such a culture in their groups, albeit to varying extents; Kevin characterized it as feeling "a bit like, you know, a social gathering where nobody knows each other" but is pleasant and open with each other and with new members.

Emergent norms and the resulting role of the site for a user can be highly contextual, as this comment from LibraryThing user Jennifer shows to be the case for new members to a group:

[New members] ask how to use [the group and site], what's proper, and everyone will tell them, just use it however *you* want to use it.

Jennifer also mentioned the danger of groupthink:

Everyone needs a leader, I think, and it's funny to me that a lot of times people will not take the lead in things; they always want to follow, and, like, even with the review process, people want to read books that other people like.

Some norms may have once been considered to be emergent or convergent, but by this time had become institutionalized within well-established information worlds, as in this example from LibraryThing user Lindsey:

…if you had one big group you would just end up having so many threads, because people start creating new reading threads when they get to 200 or so posts.

As Lindsey and other interviewees related, because of technical considerations such as loading times most LibraryThing groups encourage threads to be continued in separate, multiple parts if they last for over 200 posts. This was seen in the content analysis, as referenced in section 4.1.5.6.

To summarize, almost everyone commented on the varied cultural norms of the groups and threads they participated in, and these had a clear impact on the role LibraryThing or Goodreads played in users' experiences as individuals and as part of communities, social worlds, and information worlds. Some selective norms related to the role of the digital libraries in association with social types (see section 4.3.4 below), information values (see section 4.3.5), or information behavior (see section 4.3.6). Detailed examples of these can be found in those sections.

4.3.3.2. Expit and implicit. Norms can be explicit, such as rules set down by moderators or digital library staff; or implicit, such as cultural understandings about what is appropriate to

talk about. Both impact on the roles of LibraryThing and Goodreads. In many cases these end up aligning; LibraryThing user Betty stated this in response to my suggesting that there were written and unwritten rules for behavior in groups on the site:

> Yeah, except I think they are quite, I think they're fairly parallel … I think they reflect one another fairly well. So you basically could use the common sense of a polite person and not even have to read the rules and be fine.

4.3.3.3. Violations and conflict. Other comments were indicative of cases where norms were violated, and things happened that would not most of the time. LibraryThing user Ann provided an example of where a group went "to hell in a handbasket" so fast, that "it got deleted" by its creator, with resulting uproar from many users; this was also mentioned by Miriam. While the group was recreated, for a group that many visited and participated in to disappear like this was unusual, despite the way it had become not pleasing many (including its creator).

An issue had arisen on Goodreads in recent months, where due to author complaints placing books in lists ("shelves" in Goodreads parlance) named to be derogatory towards the author was now forbidden. Many users did not like this policy and considered it to be against the established social norms of the digital library; an explicit norm that was not coherent with the previous understanding had replaced an implicit norm. Goodreads user Tanya related her impression that "…many readers are highly incensed, many of them have left Goodreads over it," stating "the whole fracas is creating a lot of friction, between authors and readers, and it's creating a hostile environment." Fellow Goodreads user Rachelle referenced the situation in her interview, taking a clearer personal stance in favor of readers and against authors: "this is supposed to be our site." She later said Goodreads should clarify the norms and role the site should play for users: "If it's a readers' site, stay a readers' site. If it's an authors' site, it's just an authors' site." Tanya elaborated further on the social norms of author-reader interactions elsewhere in her interview:

> Not all readers on Goodreads *want* to help authors. Some have a hostile attitude toward authors. … It's very common to be hostile and it's also very common to be helpful. … it also depends on the group; different groups have different cultures.

She mentioned, though, that Group G was "actually very friendly to authors who are active in the group," a social norm specific to the emergent information world of the group.

While conflicts like these were not new to the two sites—and could be seen as a societal norm, possible in almost any interaction—Tanya said "this one seems particularly serious because people are leaving Goodreads over it"; the situation over on LibraryThing that Ann discussed, while an isolated issue, is indicative of the potential seriousness of conflict. Some other users expected minor conflict and accepted it as a norm of online communication or general human communication, as seen in comments from Sam and Melissa:

Sam: You may get harassed by someone you like, but, you know—I've seen people turning on each other on LibraryThing, but that's just one of the oddities of this form of communication, I think.

Melissa: You're always going to have flare ups of emotion, but we try to … moderate each other, to keep things calm …

Other groups understood minor conflict would inevitably happen and knew to tread with care when it did. The moderators in a group Rachelle was part of would not jump on longtime members if they "overstepped their bounds" (as mentioned in section 4.3.2), and, as Rachelle shared, in return

the longtime members that care about the group are good about going, "sorry, did not mean it that way! [laugh] I take it back, we can delete that post," you know.

4.3.3.4. Comparisons. In many cases, social norms became a comparison of the norms of information worlds at different levels and sometimes of different types (existing or emergent). A few examples are illustrative; in the first one, Goodreads user Rachelle implicitly compared the norms of traditional book clubs with those of the groups she had been part of, noting both take work to establish:

Rachelle: Like you could not, you know, you cannot say "I set out to create this kind of book club," and create it.

The next two examples show two other Goodreads users who related their individual activity levels—as personal norms—to that of other users in their group or of users of the digital library:

Kevin: I think I've got, three friends on Goodreads or something like that [slight laugh], so I'm not a very active user in that sense.

Taneesha: I mean, to talk about the book, yes, but not, probably not as much as some of the other members do.

LibraryThing users Ann and Miriam made similar comparisons of activity levels, although for different reasons. Ann expressed that certain groups' norms call for more activity than she can manage:

> I do not actually join those [groups] because it's just, if you were in that group then, I think I'd have to be on there every day for two hours just to keep up with all the threads…

Miriam, in comparison, mentioned some groups have *less* activity than her expectation, explaining why she would not post there:

> …they're small groups; hardly anyone ever visits them, and I just, I did not not think that I would have the participation that I craved.

Goodreads user Rachelle explained that the norms of the emergent information world of one of her groups led to more active users than in some other groups:

> It's a really big core group, like 20 to 30 people, that talk on a regular basis in that group. [It] is probably the most out of all the groups [I'm part of].

> In discussing an explicit rule that forbade mentioning the name of one's own novel(s) within any message posted to Goodreads Group G, except those posted in a designated folder, Tanya compared the norms of the group with others:

> I think it's a bit extreme. Most [Goodreads] groups are not that extreme about their rules about promotion. [Group G] is probably the most extreme in their rules.

A similar example comes from Kevin, who felt the site-wide norms of LibraryThing were less enforced in a particular group, but perhaps for good reason given the purpose and role of the group was to facilitate contentious debate about religion:

> …you know, I think that on the [religious debate group] the [LibraryThing] Terms of Service are a, sort of an artificial set of standards …. But I think that the motives for people to interact in that [group], I think it's in some ways the ability to escape from, it's a place where they can escape from norms that otherwise, they would be held to.

> Multiple interviewees concluded that the groups and threads they took part in on LibraryThing or Goodreads matched the norms of a traditional, face-to-face community. For example, LibraryThing user Ann stated about a thread that "this is, yeah, I guess, real community, rolling over into, very much into real life." Other interviewees commented on having taken the online community to the next stage, meeting with other members in the "real

world." LibraryThing user Melissa mentioned having met "at least 10 of the people from" Group C; "it was a little bit hard at first … [and] it can be a little bit awkward at first, but usually once we start talking, it seems to work itself out." In another case, LibraryThing user Betty related her thoughts on how the size and shape of a community could change the experience in some ways, but not in others:

> I guess one of the biggest differences between that [private Web forum] community and LibraryThing is the private vs. public nature, and the *small* group vs. the very *large*, community. You know? And it just makes for, you know, a very *different* experience. And yet, when you get down into a thread where there's a discussion going on, I would say the protocols, the way you behave, the way people interact, it just ends up being very similar.

Fellow LibraryThing user Melissa echoed this, saying she was happy that her chosen online community, Group C, had different norms than others online and off, leading to it playing a role she was happy it played in her life:

> I think that was my main problem when I did the [writing] group [on LibraryThing], is that they were very depressing and serious and … and I wanted, you know, I feel I get enough of that from real life that when I go online, I do not want to be depressed, I want to have fun!

Taken together, these comments indicate many of the social norms of threads, groups, and LibraryThing and Goodreads as a whole are norms that are true of online interaction and online communities, or even traditional communities. In this context, Goodreads user Rachelle took a nuanced approach to online community, implying attention to the differences in norms—as hinted at by Betty—was key:

> …sometimes you can say stuff and sometimes it comes out wrong on the Internet, 'cause, you know, you do not have the, unless you use emoticons, you know, every two seconds, you can joke and somebody else takes it seriously and suddenly you've offended someone.

There was one contrarian voice in Jennifer, who stated that "when you're reading what other people write, it's completely different than talking to them"; she found sharing a common interest in books was not enough to establish a sense of community for her on LibraryThing, while admitting that it perhaps was not something she was looking for. While Goodreads user

159

Taneesha felt a loose sense of community, she was not interested in connecting with other users she had met on Goodreads via other social networking services or face-to-face, with a clear "no" when asked. Their view of norms changed the roles LibraryThing and Goodreads served for them.

Users compared the norms of their LibraryThing communities to what they had found in other online communities. Taneesha felt that she would not find the kind of interactions she takes part in on Goodreads on other sites, because

> …Goodreads is, you know, the web site *to* find new books, and to discuss books … if it was like a Facebook page or anything, I do not think people would be as interested in it and as active as they were [on Goodreads], since the overall purpose of Goodreads is to, you know, books.

In a similar vein, LibraryThing user Melissa stated that "even on Facebook," she had not "really found anything similar to" the community she had found on LibraryThing, due to the norms of the two sites being different. She elaborated on the role she saw each site playing, stating that Facebook was OK for

> … the general, like, "how are you doing," and things like that; … book discussions I think still end up over in LibraryThing. Because it's hard; [on Facebook] you end up crowded with people that are *not* interested in a discussion like that, and … I think Facebook tends to be a little bit overwhelming as they give you too much information and not what you actually want, whereas you know what you're getting when you to go LibraryThing.

LibraryThing users Ann and Betty mentioned the norms of the site were such that it was more pleasant for discussion than other online communities they have frequented:

> Ann: I'm on a few other sort of places where people chat, and some of them are very dependent on where you go and who you talk to, whereas LibraryThing I would say, more or less wall-to-wall, it's pretty pleasant and civil.

> Betty: I mean, I've been to web sites where swearing and sarcasm and rudeness to other people is not only part of the culture there, I mean, it's encouraged … Where, LibraryThing is kind of the other, it's almost old-school in a way …

160

4.3.3.5. Moderation and administration. As seen in the content analysis, group moderators on Goodreads often played an important role in enforcing the norms of existing information worlds and in establishing the norms for the emergent information worlds of groups and threads. Taneesha was one of many to state the firmness of moderators and the power they have:

> If any of the rules are broken they have the right to kick you out of the group, or, you know, to report you. … and they do as they say they will do.

The firmness of moderators was appreciated by Rachelle, who stressed that "the mods do not take any crap" many times in the context of one group she was part of:

> … we have great mods who do not allow anybody to, you know, spew crap or intimidate anybody.
>
> [later in the interview] If you're there to cause trouble, you're out. Like, you do not get, I'm going to give you five warnings, and whatever. You know, you're out, you're banned, you're not coming back to us if you're going to stir up our members.

This firmness was associated with another social norm of the emergent information world of this group Rachelle was part of: she stated "we're more of a family, and nobody, like, attacks anyone else and stuff like that." In another group that Rachelle took part in, the norms of behavior and the moderators' enforcement of them were much less firm, and a disruptive poster "was allowed to post for a month, the most egregious, you know, comments ever." Finally a moderator decided "enough was enough," but the incident left a strong impression on Rachelle:

> So [the moderator] wanted to give him the leeway to discuss opinions … Where was the line from discussing, you know, your views to being a troll, and just antagonizing people for no reason except to antagonize them?

> Administration of the two sites varied. A few LibraryThing users mentioned the active role taken by LibraryThing staff, including the site's founder Tim Spalding, in the day-to-day operations of the site. While by no means seen as an overbearing presence, norms that were true across the site nevertheless had an impact on group discussions from time to time, as Sam and Betty stated:

> Sam: … there are norms that the, founder, owner, whatever, Spalding, you know, intervenes … and, you know, there's the Terms of Service …

Betty: …in general, LibraryThing actually does enforce a fairly strict code of behavior. … More than, say, a lot of other sites might, in terms of what can and cannot be posted, and how you might participate.

Melissa said the LibraryThing staff were attentive to violations of the Terms of Service and other site-wide norms:

…if someone is, for whatever reason, being nasty, or you have someone on that's just there trying to sell stuff, you can flag their comment and it's taken care of pretty quickly by the owners of LibraryThing.

The norms of how Goodreads handles the groups were mentioned with some frequency, and were quite different than those on LibraryThing. As Tanya put it:

Goodreads has a very hands-off attitude toward the groups. … they do not interfere in any way. They allow each group to make its own rules.

Rachelle agreed, saying Goodreads "lets the people decide how they're going to run things." She expanded on this to further explain the differences between groups—and associated norms—on Goodreads:

…basically the groups are what you want them to be and … there's a lot of groups that are not that well, there's a lot of groups that are, and you just have to sift through the groups and find where, what you want and here you feel comfortable. And I think that's the best that Goodreads … lets the people decide how they want to run their groups and … decide whether they want to participate in a group that's run that way or not.

Nevertheless, in one group—Group I—it came to the attention of Goodreads staff that inappropriate content was being posted; this content was deleted and the moderators were contacted. They then sent a message to all members which Kevin, a Goodreads user and member of Group I, received:

…there have been a couple of messages from the moderators recently; apparently there have been a few people having, [slight chuckle] well let's just say, inappropriate behavior on some of the forums, but … I have not been exposed to any of that … [The messages said to] basically avoid this inappropriate behavior because the Goodreads administrators had deleted some threads as a result of whatever it was they were posting. … they were violating the user license of Goodreads.

While the norm might be for Goodreads to leave groups be, there are still site-wide norms that must be followed (what Kevin refers to as "the user license"), similar to LibraryThing.

4.3.4. Social Types

      Social typing occurred of many populations and in different contexts. These included typing of authors; of each other as individuals, collectives, "friends," and in a negative light; of moderators and leaders; of themselves; and of book characters. Social types that applied to multiple online communities and profile use as a form of social typing were also discussed.

      4.3.4.1. Of authors. The friction between authors and readers on Goodreads—discussed in section 4.3.3.3—gave opportunities for social typing of authors, although much of it was implicit. On both LibraryThing and Goodreads a couple of interviewees referenced explicit discussions of authors that included social typing in an emergent information world, such as this referred to by Betty on LibraryThing:

> Like, some people liked Isaac Asimov, and these [other] people thought it was beneath them, that the guy's not a great writer, and you know, they just seemed to be bent out of shape when this, somebody liked him.

These users then left LibraryThing Group A "en masse," as it seems they felt disagreement on this social type was enough to push them apart. Ann referenced debate on another author in another LibraryThing group:

> One of the ones that comes up time and time again … is Orson Scott Card … 'Cause he's a bit of a bigot, and he's very anti-homosexual, so I mean there are some people who take that as, like, "I cannot read his books with any sympathy." … You know, that's a guaranteed heated debate …

While socially typing Card in connection to his beliefs, Ann appeared in further comments to believe his books (e.g. *Ender's Game*) should still be read by those interested, given their significance within the science fiction genre.

      Rachelle was direct in addressing the Goodreads author controversy, noting her personal beliefs on how and why socially typing authors was acceptable despite Goodreads having decided this practice was forbidden (see section 4.3.3.3):

> …if a male author goes out and says something sexist, you know, then I think a reviewer has every single right to say, even, like, make a shelf [i.e. list] saying, "these authors are sexist," you know? If you want to, you know, not necessarily give a book one star when

163

the book has nothing to do with it, but have a shelf saying "sexist authors," and file that author's books under the shelf of "sexist authors…" 'Cause you know, it's giving knowledge to other reader that this author had sexist views, and if you do not want to read someone who's, you know, [books] from someone who's a sexist, then stay away.

Tanya referenced the "hostile attitude" some Goodreads users have towards authors, implying they have perceived and defined them with a social type—at least in their information world—before they begin interacting with them. She stated that she, herself, would "probably stay away" from authors who did not act with civility, but "would not tar all authors with the same brush," displaying a nuanced typing process. Her critical incident of interaction included the author Dan Brown being socially typed, based on the kinds of books he has written, to serve as a point in translation (see section 4.3.2.1). Other typing of authors was related to the phenomenon of information value (see section 4.3.5).

While most typing of authors considered them to be outsiders to LibraryThing or Goodreads groups and the associated information worlds, in other cases authors could be typed as insiders. Part of this can be ascribed to two interviewees, Sam and Kevin, being hobbyist authors themselves (and self-identifying or self-typing as such). Kevin participated in hobbyist author and writing Group I on Goodreads, and was invited to join the site by a friend and professional author; he socially typed her as a voracious reader and a trusted adviser during his interview. He also stated he had "an online … acquaintanceship" with another author, which encouraged him to take on a role of being helpful to other hobbyist authors as a social type in the emergent information world of Group I. Tanya and Ann discussed connections they had with authors through LibraryThing, Goodreads, or venues they considered related to the community, and neither seemed to socially type authors as true outsiders, as Rachelle did. Nevertheless, neither appeared to have deep connections with authors, and as stated near the beginning of this section Ann had no qualms with stating her feelings about an author during the interview, at least.

4.3.4.2. Of each other as individuals and collectives. Interviewees often referenced what they knew about other users of the groups they participate in and how it affected the coherence and convergence of information worlds and the role that LibraryThing or Goodreads played in those processes. Most examples of getting to know each other (see section 4.3.2.2 for discussion of this in relation to translation) inevitably led to group members socially typing each

other in the process. Other examples did not relate to translation, such as Goodreads user Rachelle saying that

> when I see the names, you know, I'm like, I do not *know* these people, 'cause I do not know them in real life, but I know this person's in Australia, this person's in England; I know this person likes battle scenes … I know that, like, this girl, she loves animals, and this person's a vegetarian, and this person lives on the farm, you know, just by looking at the names.

These social types were often a combination of those coming from an existing world (such as knowing where people live) and those that could be considered in the context of the emergent world of a thread or group (such as knowing the kinds of scenes people like in books). Rachelle referred to the gender mix of this same group—almost as many men as women, unlike Goodreads as a whole—later in her interview, and continued to discuss characteristics of the group members and her other Goodreads connections throughout.

What was known was not always as factual as in Rachelle's comments; Melissa characterized other members of LibraryThing Group C in intangible terms:

> …even if you do not have as much in common with some people, it's more their demeanor, the friendliness of them, that you're OK with the differences you might come across, and you just, you're, you deal with them like a real friendship would be dealt with.

When asked if the friendships were "just as real as any other friendship [she'd] ever had," Melissa answered "oh yes, definitely … these are people who I … some you feel that you can confide in about things." She added later in the interview that "it's kind of like being in a small town; you may not talk with everyone everyday, but you know everyone's faces." This social typing is noteworthy for the degree of convergence it displays. While Melissa knows that everyone is still individuals, with individual interests, she still argues that they have bridged those differences and formed a strong connection and community through perceiving each other as "real" friends, within an emergent information world. This is shown in her later characterization of the group as "a great group of people."

Sam's experience was similar to Melissa's in many ways, with his typing of fellow group members mentioning "there never [having been] an unharmonious moment, you know; people are decent and kind on this site, in this group." Members were seen as "very careful not to offend

and very thoughtful." Again, there was a strong degree of convergence in the private LibraryThing group Sam participated in, with a clear emergent information world consisting of its members; this may have been helped by it having "been a while since someone new joined …."

Lindsey characterized her online connections with less fervor, but from a viewpoint not incompatible with Sam and Melissa's, as "like real life … you find the people you feel most compatible with." She further elaborated that everyone in the serious book reading and reviewing group she was part of was "interested in reading seriously" and were "respectful of each other," but mentioned the "different kinds of people" the group encompassed, displaying characteristics of both an emergent information world and multiple existing worlds. She implicitly acknowledged that there are common social types within the group as "a pretty welcoming bunch," but many differences in how people are perceived and defined by each other.

Ann took a similar approach in characterizing a fantasy genre discussion group on LibraryThing as consisting of people at "completely different life stages" and having "completely different, sort of, things that they're doing and things that they've done," but fell closer to Melissa in terming the group "friendly" multiple times during her interview and characterizing it in community terms. Ann was willing to socially type members of different groups she was part of as "hard-nosed," "serious readers," …, and a particular member as "kind of leading it … kind of making big statements …."

Betty socially typed the people she had interacted with on LibraryThing in saying "we actually became kind of a close-knit virtual community," but hedged by adding "without being a close-knit, 'real life,' you know, community." She was not opposed to the idea of going for coffee for them if she were to meet them, and characterized many of her connections as people she "would be interested in being acquaintances or friends with in real life, *if* I knew them in real life." Betty seemed to be describing a semi-emergent information world that still—at least with respect to social types—featured some differences, like with many others.

Taneesha, a Goodreads user, was on the opposite end of the spectrum to Melissa in her social typing. She explicated she "did not know any" of the people she had recently interacted with in a particular group, saying "these are all new people, as far as I know…" Part of her experience was undoubtedly shaped by this being a large group—"over a thousand people"—and a group she had only been a member of for three months; from her perspective, social types had

not cohered, let alone converged to form an emergent information world. She claimed that she did not "have that many friends on [Goodreads]"; she did not use the site for that purpose (also see section 4.3.3.4).

4.3.4.3. Of each other as "friends." Others made references to "friends," appearing to perceive these connections either as befitting that social type as defined in broader society, or in what one might call the Facebook sense, where for many it has taken on more of the meaning of "acquaintance" (as explicitly acknowledged by Rachelle) or "weak tie." LibraryThing and Goodreads provided functionality to "friend" other users in much the same way as on Facebook, as mentioned most among younger interviewees and those who used Goodreads (where the "friend" functionality is more prominent). Taneesha provided a mix of these two type definitions; of the few friends she did have on Goodreads, she stated they were "someone whom I interact with on a daily [basis], or as much as I can," appearing to perceive them as closer friends than Rachelle, for example. However, she had no desire to meet them face-to-face or to connect with them on other social networks, so the depth of the "friendship" and emergence of a new information world was not to the level of other users, like Melissa, who had connected with others through other social media sites and in the "real world."

4.3.4.4. Of each other negatively. Not everyone was pleasant with their social typing of others. Betty referenced other users who had left LibraryThing Group A after disagreeing on whether Isaac Asimov was a good writer (mentioned above) as having joined a "'literary snob' forum," saying about herself that she would remain no more than a lurker there because—in an example of self-typing—"I'm just *not* a book snob, there's just no way around it." Tanya's reference to some Goodreads users being hostile to authors could be seen as her applying what was, in her view, an unpleasant social type to these users. Many occurrences of social types came with an expression of information value, as will be discussed in section 4.3.5.

4.3.4.5. Of moderators and leaders. Moderators were invoked by all four interviewees who use Goodreads as an explicit social type and role; they were a prominent topic in the interview with Rachelle, who typed the moderators of the historical literature group she was part of as "great" and discussed their duties, tasks, and information behavior (see section 4.3.6). The social type of leaders was invoked by many LibraryThing interviewees; explicitly by Sam, Miriam, Ann, and Lindsey, and implicitly by Melissa. Sam, Ann, and Melissa referred to other users who had taken on a lead role in creating or facilitating group discussions in an emergent

information world; Lindsey self-typed herself in this role; and Miriam typed another user and self-typed herself in two different contexts. Ann mentioned the leader of the thread she referred to—which she further typed as "a writer herself"—took on the role in a way that would "invite people to join the conversation." Melissa self-typed herself in a lesser role of trying to "revive threads" and "try to get the energy back into the group," when necessary (see also section 4.3.6 below for more on this), not considering herself to be one of the two leaders of LibraryThing Group C. Miriam typed another user as "kind of like the cheerleader." Jennifer's concerns with groupthink, followers, and leaders (see section 4.3.3.1) also invoked this social type.

4.3.4.6. Of themselves. Other examples of self-typing or self-identifying, although in more pleasant circumstances than Betty's above, occurred during the interviews. Miriam, a LibraryThing user, said she was someone who would type herself in a new group as someone interested in playing a role, comparing herself with others who would remain lurkers:

> You know, if I joined a group I'd tend to say, "hey, this is me and this is what I'm interested in, and this is why I joined."

Lindsey typed herself based on her prior use of online communities and social media:

> …something really initially appealed to me about LibraryThing because I had never joined any kind of online group before that. I was not a Facebook person, you know; any of the other things that people do, I had not really done.

Like many, she considered herself "a real book lover" and "enamored of books." Tanya typed herself as someone who "like[s] to help people out in general" and as a "librarian" and "library student" (while setting up the interview she had volunteered that she was enrolled in an LIS master's program). Melissa considered herself to be "one of the mothering types in [Group C] that just tries to cheer up people who are having problems …." Kevin typed himself by saying he took on an informal role of "greeter" in Group I on Goodreads for a while, welcoming new members to the group (a task the moderators had an explicit role in performing). Taneesha typed herself by her occupation, a staff member in a high school, due to a school announcement that was made and overheard by myself during her interview.

4.3.4.7. Of book characters. Social typing of book characters—or discussion thereof— was much more limited in the interview data than in the content analysis data. Only Ann's discussion of the social typing of a character from Rich Berlew's *Order of the Stick* comic (discussed in section 4.3.2.1) provided an example of this.

4.3.4.8. Online community social types. Existing social types that are common in online communities were referenced by interviewees. LibraryThing users Sam and Miriam referred to the lurkers (non-participating members who read but are rare to post anything themselves) in the groups they are part of, although neither used the term "lurker" to describe them until prompted by me. Lindsey made a brief reference to "lurking" in discussing how new members might not begin posting until they have observed a LibraryThing group for a while, and fellow LibraryThing user Ann referenced lurking implicitly when discussing a different online community experience. No Goodreads users mentioned lurking or referred to it implicitly.

Rachelle, Betty, and Miriam referred to the online community stereotype of "trolls." In Rachelle's case those who were "on the other side of the political spectrum" from her beliefs and views or who posted provocative comments and had predetermined intentions to create argument in a political discussion group on Goodreads, were typed as trolls. Betty mentioned a few posters whose behavior "might even say verges on trolling … they seem very, *invested* in their viewpoint …," within a LibraryThing group on ancient history. Later in the interview she half-joked that she does not "pick out some special site to go be a masked troll somewhere," but appeared sincere in stating "there are people that do," raising the social type without applying it to any specific individuals. Miriam related similar experiences in the political and religious discussions on LibraryThing, saying "they go round and round with the same stupid issues; there are a couple of people who troll." She stated that "when those few people contribute, it [a discussion] just goes down the same path," perceiving and defining these trolls as reducing a thread's value and usefulness. While no other users mentioned trolling explicitly, Kevin did make reference to "some rather, you know, aggressive behavior" in a different online community, and Sam implicitly typed a few users as fitting into the type of "pompous ass" in a contentious religious debate group on LibraryThing.

4.3.4.9. Profiles. Another element common to other online communities is the profile, which provides for a degree of social typing and identity portrayal that users can exert some control over. Multiple interviewees made reference to profiles as a way to learn about how they should perceive other users in context. Ann referenced that "not everyone fills those in, it does not always tell you anything much at all," but still found them quite useful. She found the lack of necessary detail in profiles on other sites, compared with LibraryThing, as a factor in the digital library's role in her information behavior:

…because if you were just on, I do not know, Messenger or Skype, you know, there's nothing on there to tell you anything about you, whereas if you're on LibraryThing I'd see, I'd be able to just look and see if you, have you cataloged books?

LibraryThing users Miriam and Lindsey mentioned using profiles, and Goodreads user Tanya mentioned referencing the profile of an author so she could better understand what novels he had published and what they were about.

4.3.5. Information Value

Information value plays a huge role in users' individual and collective information behavior, in the existing and emergent communities they are part of, and in the roles that LibraryThing and Goodreads play in. A coded mention of information value in either an existing information world or an emergent information world occurred, on average, every 28 seconds in the interview data. This section cannot present all of these, but will provide an illustrative overview focusing on cases where information value is important to the roles played by LibraryThing or Goodreads in users' individual and collective information behavior and in user communities. This includes coverage of the impact of existing information worlds on information values, the information values users shared with others, how these shared information values led to a sense of community and commonality, and conflicts and disagreements over information values.

4.3.5.1. Existing impacts. Many users felt that the existing information worlds that other users came from would impact on their information values of given books. For example, Goodreads user Kevin said that he could often sense on the site that

…if, you know, one of the people has religious views, another person does not, they might have different opinions about a book that either has a religious slant or, you know, lampoons a certain religion, or so on.

The views and values of outsiders played a role. Goodreads user Tanya mentioned that, in her interaction with an author where she needed to determine what one of his novels was about, she "was basing [her determination] on the description, and the description may be inaccurate, even if it is author provided." This implies that authors may not value accurate descriptions of the subject of their books to provide one, or to work with an information professional who can give them. Given Tanya's interaction, though, it appears they may value them enough to argue about them once they are made available by Goodreads and publishers.

170

There were a few cases where users appeared to value something that a group could provide them, but did not take advantage of it for various, most often pre-existing reasons. Most of these cases imply users' existing judgments of information value can complicate the processes of coherence and convergence. Kevin provides another example from Goodreads Group I, a group for hobbyist writers and authors, which allowed members to post their writing up for critique and discussion. He said, "you know, it certainly would be something that would be worth pursing, if I had the time." Elsewhere, he made it clear that he valued the group as a whole and the opinion of its members, and already posted some of his writing to another online community. Kevin seemed to feel there would still be too much of a commitment to make to getting his writing up in Group I to make it worth his while, despite clear convergence with the information world of the group and coherence with the worlds of some of its members.

4.3.5.2. Shared values with others. Users often explicitly stated or implicitly referred to the common values they had found while interacting in LibraryThing or Goodreads groups. For example, Goodreads user Rachelle said that, once she started using the groups, she realized what she had discovered:

> …first of all I went in, you know, because of recommendations, and then we started talking about books and I'm like, oh! Here are people who read the same books that I read, and I can talk to them about it. 'Cause I know *no*body in real life who reads the same books that I do.

Rachelle had found a group of people, as an emergent information world, whose information value judgments about genres and book interests aligned with hers in historical fiction. She later detailed these common experiences, such as the group tending "to read a lot of battle books" due to their converged values. This did not mean that people did not visit the group with different values; despite the group not reading romantic novels she said that she'd "seen a lot of people trying to, you know, go like, 'oh, can we read the romance?'" These people would instead be sent to a group that almost always did group reads of historical romances, "like, every single month" according to Rachelle. The two groups differed enough in information values to not be considered one information world, but this did allow each of them to be that much more convergent around shared information values.

Shared values sometimes had a narrow focus. Ann mentioned a thread had emerged in a LibraryThing group where "there are about four or five readers who are quite curious about

fantasy, which I do read a lot of, and how women turn up in it." This resulted in a small emergent information world, but one where the curiosity of all the users led them to share information values and *compare* values and interpretations, despite not all of their interests aligning:

> …it's interesting to talk with them and sort of see if we're having similar structures; I mean, some of them are much more attentive readers than me, and I cannot read some things and just do not even tough into those themes…

A similar case was reported at some length by Miriam, a LibraryThing user who started a thread for discussion of illustrations from editions of an early 20th century children's novel. After starting the thread, she invited people she knew liked the novel in question, who had varied group affiliations. In doing so, she used her existing connections to help create or strengthen an emergent information world based around common information values. The processes surrounding Miriam's creation of this thread are discussed further later in this chapter (see section 4.3.8 on sites).

Another example comes from the private LibraryThing group Sam was part of, where at one point

> …everybody was listing the 100 best books written. So, I'm checking to see what people are writing, I came up with a list myself, and, one of the people in there is writing a lot about each choice … And so, I'll go just to see what people have added, and I especially look for the one person who's going at it in-depth.

While Sam did not come up with the idea for the thread, once people started participating he valued seeing everyone's contributions, with emphasis on this one person who was writing good reviews with their contributions:

> It's good writing, and also, by now, he's someone I'd welcome to my home, you know, after interacting with him for, I suppose, nearly three years now, something like that.

He later stated that the reviews from this good writer were

> …more personal, and you know, we've all read his reviews of some of the books he's read, but he's also, now he's given, you know, anecdotes. And so it's that much more interesting.

Sam placed clear value on the contributions of this other member, and the two of them shared some information values within a small, but emergent information world. Sam, of course, shared information values in the emergent information world of the thread in question.

Shared information values were not limited to groups. Goodreads user Taneesha, who had few friends in "real life" that shared her passion for reading (see above), stated her view of the shared norms and values of Goodreads users around reading:

I mean, you'd be surprised how passionate people are about the books that they're reading and the characters that are in the books, and how they think a book should go, or how a book should end, or how it should start, and what should keep you interested.

There was value shared in at least one case against spoilers, found to emerge from a LibraryThing group read—where members of a group read and discussed the same novel at the same time together—as Betty discussed:

I think it was mentioned early on … that the assumption was that you had already read it, you know. But, yeah, concern about spoilers is pretty common … threads either seem to make the assumption that you've already read it and nothing is a spoiler, because it's a group of people discussing a book they've read, or, if you're posting about a new book, and you do not know if people have read it or not, then, you know, I think the common courtesy is to *not* post spoilers.

This value seemed to be stated for and shared by participants in this group read, but may be one that is common across all group reads based on Betty's comments. One message in the content analysis stated a similar norm in a Goodreads group (see section 4.1.2.1), but no other interviewees mentioned spoilers explicitly. Betty had a personal stake in not being spoiled, as she was coming to a group read after most of the participants had finished reading and discussing the book in question. Despite not expecting to, she found a couple of other users who were starting to read the book, allowing for a small scale emergent information world to emerge and provide for the group read activity.

4.3.5.3. Sense of community and commonality. Many other users related shared information values to the sense of community and commonality they felt. LibraryThing user Lindsey had a similar "happy" experience to that of Rachelle (in the previous section) realizing how the digital library and online communities could connect her with others who shared similar information values and interests about books:

You know, when I was reading books when I was a child, little did I know that there …
would be such a thing as the Internet, and you could talk to people you do not know in
real life and, it's—[pauses]—I mean, it's a happy surprise.

Miriam felt a sense of community, stating that

…very few people in my real life community have a passion for the things that I have a
passion for… and it's affirming, to know so many other people [via LibraryThing] who
like the same things, and, we know that since we like the same things, we like each other
too.

Sam seemed to share the same sense, focusing part of his interview on what he valued
from LibraryThing from a discussion and community perspective. He said that "it allows people
to make a little bit more of a choice of who they're spending time with"; one could make fine-
grained choices about who would be part of a group—especially a private group like the one
Sam was pat of—than in a real-life venue such as a "tavern" (mentioned elsewhere in his
interview). He struggled a bit to explain why he felt a strong sense of community in the private
group, but when member-checked with the idea of "everybody knows your name" from the
American sitcom *Cheers*, non-American citizen Sam seemed to agree with the general sense that
there was a certain something, helped along by the shared and common values and interests
members of the group had, that helped them feel part of a common, convergent site and
community emerging from their use of LibraryThing. He tried to explain this process—of what
might be termed translation on steroids—himself, and did not do too bad; see the quote given
earlier in section 4.3.2.2 on translation.

LibraryThing user Melissa's comments, referenced in section 4.3.4.2, on "deal[ing] with
[differences] like a real friendship would be dealt with" are indicative of common and shared
information values of a strong sense of community, despite any "differences you might come
across" in other values. As she stated later in the interview, "some just want the connections to
people who are interested in something they like" (although this is, of course, not true for
everyone).

Ann shared an amusing view of this sense of differences in values being OK in a strong
community:

No one in the [LibraryThing friendly fantasy fiction] group would ever, they would not
slag you off at all; not even if you went on there and said that you loved *Twilight* and said

174

it was the best thing ever written. No one would, sort of, jump on you and give you a kicking for that. They'd just go, "OK, well yes a lot of people like them." [laughs] No one's going to chat to you about it, but…

While the *Twilight* series would not be of value to this group, and they might share a social type of fans of the series in private, Ann's comments indicate they are accepting that others' information value judgments are different, and would not ostracize anyone from the community for such activity. This can be compared with the strong norms and values in some groups against unwanted content, such as advertising (see section 4.3.3.5); the latter is against explicit rules and may get a user kicked out of a group, but differences in information value judgments are not a rule violation, but a different normative view than the majority of a group. Later in her interview, after mentioning that "this is, yeah, I guess, real, real community" (see the discussion of norms in section 4.3.3.4), she observed again that the sense of community goes beyond having common interests:

> …people are making connections above and beyond, you know, oh it's nice that I have something in common with him, we've read the same book; you know, this is, it's obviously meaning quite a lot to people.

4.3.5.4. Conflicts and disagreeements. This provides a contrast to the examples of conflict and disagreements over values that were seen or reported by interviewees. Goodreads user Taneesha was asked what common connections there were between her and the other users she was interacting with in a group she was part of, and she said "yes, all [valued] the YA, the young adult book group," but that she "cannot think of anything [as a common interest], apart from that." Over the course of the interview, it became clear that she had little else in common in other phenomena (as seen elsewhere in this chapter), and focused on the one thing she valued most in Goodreads: using it "to find new books, and to discuss books," nothing more. Her values and interests did show strong coherence with those of the group—with a shared interest in YA novels—and with Goodreads as a whole—as mentioned above with her love of reading—but strong convergence and emergence of a new information world that included Taneesha as a member did not seem to be occurring. She still placed clear value in Goodreads as a site, and felt that if it went away

> …it would kind of suck, 'cause you would not have … I mean, it's kind of like a one-stop
> shop; you get to find books as well as find people who want to read those books or have
> read them.

As such, Taneesha's degree of actual conflict with other group members was not high, and she could remain cohered with the group, but did not have the same level or kind of experience as Ann or Melissa. Of course, she seemed happy with and accepting of that, given her narrow focus on book reviews, discussions, and recommendations.

Jennifer felt there was not a match between her information values and those of others she interacted with (in a loose sense, since she was a rare user of the groups and focused on reviewing). She stated the following at two separate points in the interview:

> I've found through these sites, you know, you can think you know people and then they'll
> say something that's, like, totally off the wall, and you realize you do not know them at
> all.

> I like that I, you know, if I wanted to I could talk to other people who also enjoy books.
> And you would think that that would … you would think you would have more in
> common with them because they do like books, but I've found that's not true. You know
> you do have that one thing in common … but a lot of times that's the *only* thing you have
> in common.

While Jennifer, like Taneesha, seemed happy enough with her use of the digital library, she was a more frequent user of BookCrossing, another web site and online community that allowed her to give away books to others and track their progress. Her experiences there were of greater value, overall, and showed that any convergence for her on LibraryThing was not significant. (See section 4.3.8 for further discussion of sites for information behavior and activities.)

When there was actual conflict and upheaval within a group, thread, or community's membership was where the clearest contrast was drawn with those groups sharing an understanding about information values. Betty's relation of a disagreement over the information value of Isaac Asimov's writing, and how a selection of people "exited en masse" from LibraryThing Group A because of the disagreement is the best example of such conflict. This occurred despite Betty—and perhaps others—feeling that those that left "actually were one of the people … [who] had the most interesting conversations about the books." Once the conflict occurred, the group was no longer as useful or valuable for Betty and she "did not find as much

to participate with in [Group A]," although she still follows it and checks in "once a day to once a week." Conflict like this strengthens the argument that emphasizing the boundaries and barriers between users and user communities will lead to lower levels of coherence and convergence— i.e. less consistency, common understandings, and feelings of community—over time. Encouraging common, shared value judgments of information across a group, and accepting that values may differ for some information and at some levels, will lead to a stronger community and a greater role being played by the digital library in users' information behavior and their communities.

4.3.6. Information Behavior and Activities

Information behavior and information-related activities were frequent mentions by interviewees, albeit not quite to the same level as information value. Participants discussed their individual information behavior and activities, behavior and activities they shared with others, examples of divergences from normative behavior, and how some information behavior related to community ties and information values. As with the messages analyzed during the content analysis phase, some examples in this section can be characterized as true normative information behavior, with a clear connection to information seeking, use, sharing, or avoidance. Other examples do not have such a clear connection, but still fall under the view of "information-based occupations or pursuits" being considered under the view of activities, drawing from the social worlds perspective. Emergent distinctions between these two and difficulties encountered in coding will be returned to in Chapter 5; as with section 4.1.5.4 earlier, this section treats information behavior and activities as one phenomenon, following the coding scheme and procedures established in Chapter 3.

4.3.6.1. Individual. Interviewees related their normative information behavior and activities when characterizing how they used LibraryThing or Goodreads and the reasons for their use. Some examples of this were included in section 4.3.3.1, such as Tanya's posting of books to Goodreads for discussion, not cataloging purposes; and Lindsey's investment in LibraryThing over other book sites. Another example was referenced in section 4.3.5.2: Miriam's completion of a survey of the illustrators and illustrations of an early 20th-century children's novel. Miriam stated she would often introduce herself when she joined a group, explaining what she was interested in and why she joined.

Kevin's opportunity to post his writing to Goodreads Group I (mentioned in section 4.3.5.1) led him to relate differences in his normative information behavior on Goodreads compared with another site he used:

> I guess the difference between this site and the other site I mentioned earlier, is that on the other site I've actually posted some of the things I've written, which I have yet to do on Goodreads.

Melissa referenced going to the library as part of her normative behavior, but stated that "it's hard to find people who are into the same books that you're into" by doing so, resulting in her normative use of LibraryThing as an additional space for finding connections. A further comment she made later in the interview stressed the nature of this normative behavior:

> …I know that I just feel like this was, just, such a great group of people that I wanted to make sure that, every once in a while, I say, "Hey, still thinking of you! [chuckle] Come on if you get a moment."

This comment shows Melissa was encouraging people, in a gentle way, who have not been around LibraryThing Group C in a bit to come back to the group and participate, if they can. Maintaining social ties within the context of the community, Melissa saw this as normative information behavior and activities for herself and as a role—a social type—that she played within the group, to help "get the energy back into the group," as she put it (see discussion of Melissa's roles within the group in section 4.3.4).

4.3.6.2. Shared. There were multiple references to normative behaviors and activities that many users of each site would take part in. For example, the process of adding metadata about books to the digital libraries was referenced by Tanya as "classification … provided by the members," called "'shelves'" in Goodreads. She said "readers can classify books any way they like." Other mentions of shared interests in talking about books, genres, or topics are examples of engaging in shared, normative information behavior or information-related activities within an existing (if LibraryThing or Goodreads as a whole) or emergent (if within a particular group or thread) information world; many of these were discussed in section 4.3.5.2 above, as most of these cases focus on a common information value driving the interaction among users. Other examples of shared, information-related activities included

- "welcoming new folks to the group" (Goodreads user Kevin);

- "reading seriously and talking about what they're reading" (LibraryThing user Lindsey);
- "listing the 100 best books written" (LibraryThing user Sam);
- "see[ing] if we're having similar structures," values, and interpretations around gender roles in fantasy fiction (LibraryThing user Ann);
- engaging in a group read (LibraryThing user Betty and Goodreads user Rachelle);
- reading challenges (Goodreads users Rachelle and Taneesha);
- reviewing "relevant links to articles" on politics (Rachelle); and
- exchanging books of interest with other members (LibraryThing user Miriam).

While some activities might be seen as mundane, often the details and nuances of the interaction would further establish what was normative and what was not. Many interactions still relied on what was normative for LibraryThing or Goodreads as a whole, including reading but in many cases "actually talk[ing] about books, as opposed to just reading them," as Rachelle put it. She elaborated that this moved "reading books from a solitary to an activity … that you can do with other people." Interactions implicated normative information behavior and activities for online communities, with Betty noting that "the protocols, the way you behave, the way people interact, it just, ends up being very similar" in different online communities. The normative patterns of human communication and interaction in society played a role.

4.3.6.3. Divergences, digressions, and non-normative behavior. A notable set of examples of shared, normative information behavior and activities came from Melissa, a member of LibraryThing Group C. As observed from the content analysis, this group liked to play a lot of forum games, and Melissa confirmed this by reviewing many of the games and the simple rules that they took part under:

> I mean, we have a word association game where pretty much you jut say what's the, what the first thing is that comes into your head. And there's a Narnia hangman which is just straightforward hangman. The movie quotes thread, kind of, it's just, whatever quote you think would fit next, you write in. And sometimes you do not know what the person before you was thinking, but it's OK, it does not matter!

These rules governed the expected normative information behavior within the thread for each game. Melissa mentioned something else:

179

…sometimes things go off on a tangent, sometimes a whole thread will get completely derailed because someone started going in a different direction entirely. And, and that's OK too; I mean, it happens, and you can start a new thread for the game or you can just keep going with whatever it turns into.

In essence, it became normative within the emergent world of Group C that there would be non-normative information behavior, and in many ways that non-normative behavior *became* normative though the acceptance of divergences of topics and derailment of threads as something that would—and perhaps should—happen.

A different example relating to divergences in topic came from Miriam, who was a member of two LibraryThing groups and had started a thread in one of them—on pre-1950 literature—on the illustrations of editions of an early 20th-century children's novel. We had the following exchange:

Miriam: Some of the people, a lot, the core people in this [pre-1950 literature] group also belong to another group that I'm heavily involved with, the [gardening group]. And sometimes conversations that belong in one place, you know, slip over into the other group."

Adam: Sure. Why would you say there's such overlap there?

Miriam: Because we're getting to know each other, you know, in a more rounded way. … Somebody in the [illustrations thread] asked me to post pictures of a gardening project, and, that would have been more appropriate for the gardening group.

In this case, the divergence was caused by there being three overlapping worlds—the two groups and the thread within one of them—consisting of many people who shared the same interests, social ties, and sense of normative information behavior. While as Miriam said the gardening topics were not normative for the illustrations thread, such overlapping divergence appeared to be accepted, and so to an extent became normative like divergences did in Melissa's Group C.

Mention was made by Goodreads users of new topics coming up and diverging from existing threads, with new threads created by moderators to turn what was non-normative information behavior into normative information behavior. This will be discussed further below in section 4.3.8 on sites.

4.3.6.4. Community ties, everyday life information, and values. Those who felt a sense of community and commonality due to shared information values (see section 4.3.5.3), and who had often established social ties and connections within the communities they were part of, referenced their interactions with these users as being normative. Since such interactions were almost always mutual engagements, this should be considered information behavior or an information-related activity occurring within an emergent information world, albeit sometimes a world containing only two people. Sam provides a good example in the context of the private LibraryThing group he was part of:

…by now, he's someone I'd welcome to my home, you know, after interacting with him for, I suppose, nearly three years now, something like that.

The welcoming style of interaction is an information-related activity that Sam and this other member engage in, and have done so for some time. At the same time, Sam did not feel the group shared common information needs, wants, or desires, but agreed that "the most important aspect of it is engaging in [shared] activities." In member-checking, he agreed with my statement that "here it's much more about the social activity and the information is very much secondary to that." Sam's statement also indicates a degree of shared social norms around which activities are appropriate to engage within; both the social norms and the information behavior and activities codes apply to his circumstances.

It became clear during Sam's interview that, in the tight-knit community of the private LibraryThing group where Sam participated, his interactions fell within a broad definition of information behavior and activities, where the interactions could be about values, interests, types, information, or building social connections. These information-related activities (in most cases) and information behavior (in those cases with a stronger connection to information use or sharing) explained much about the role that LibraryThing and the group played in his life and in the emergent information world of the private group. As stated elsewhere in this section and chapter, normative information behaviors and activities often had relations with the other phenomena of interest; Sam's experiences provide the clearest evidence of this.

Other interviewees discussed how community ties and connections related to the normative information behavior within a thread or group. Miriam, a LibraryThing user, stated:

You see people on a regular basis and talk about things that are, interest you, and the rest of your life does creep in; you know, people know when you're having health issues, and

181

financial issues, or whatever. … But, there's an awful lot of emotional support when you

allow that to be there.

This indicated that, at least in her experience being part of multiple groups, that exchanges of everyday life information might not be normative (in a narrower sense) for the topic of the groups in question, but it *is* normative for human interaction and for LibraryThing, providing for social and emotional support based on the community ties and connections that emerge over time.

Goodreads user Rachelle provided evidence of similar experiences in that digital library. Within a "random," off-topic thread in a group on historical fiction she was part of,

…people are like, you know, like somebody a couple [of] weeks ago was like, "oh, I'm going out and the husband and I are building a chicken coop today. … so it's like, that thread lets you get to know the people …. So you know their book taste as well as some personal stuff that people talk about. You know, right around Christmas everybody was taking about what they're doing with their families …"

This is illustrative of the range of everyday life information sharing, focusing on community ties that went beyond a common interest in historical fiction, that was accepted as normative in this thread. While the content was not always the same—not everyone was building chicken coops or spending time with family—the type of information behavior and activities taking place was shared across the emergent world represented by the thread and—since Rachelle said many users posted in both this thread and others within the group—the group as a whole.

LibraryThing user Ann discussed one "friendly fantasy" group where there was "loads of, kind of irrelevant chit-chatty stuff about what people are doing at the weekend and, you know, blah-blah stuff," such as talking about their pets or family. Melissa mentioned a "rants thread" in LibraryThing Group C where people could vent about and discuss upsetting situations. Both of these served a similar purpose to the "random" thread in Rachelle's group. According to Melissa Group C took part in a "secret Santa" gift exchange every year, a selection of members had visited a traveling exhibit related to the *Narnia* series, and some members had shared knitting and other "crafts that [they] had done." Ann mentioned a couple of community efforts in the "friendly fantasy" group, one where a user's husband had a medical problem and "40 or 100" people set up "a collection, PayPal thing" for him, and another where "in Australia, someone, either in the fires or the floods, lost all their books, and a whole load of people were sending

books in for them"; this latter case of a shared, information-related activity was also mentioned by fellow LibraryThing user Miriam. These were all examples of shared normative activities—at least for a period of time—that strengthened community ties and connections, with less emphasis on the normative topic (*Narnia* books or fantasy fiction, respectively).

4.3.7. Organizations

Overall, fewer mentions of or allusions to organizations were made by interviewees than most of the phenomena of interest. More were made to existing organizations than those that emerged as part of new social and information worlds.

4.3.7.1. Existing. Many references to existing organizations were to LibraryThing and Goodreads themselves, while other mentions were of other organizations that they were part of or aware of, and their relation to LibraryThing or Goodreads. In many cases these were better described by considering the sites associated with each organization, and so much of this will be discussed in section 4.3.8 below instead. Many of the examples of references to organizations that did *not* involve a site (i.e. where an existing organization was coded for, but an existing or emergent site was not) were due to interviewees' answers being split up by pauses or acknowledgements from myself as the interviewer, or in some cases—since at some level almost anything can be considered an information behavior or activity—the role of such a site for information behavior and activities being minimal and implicit. Nevertheless, a few of these examples are notable and worth mentioning:

- Discussion of groups as organizations, with most focusing on how well or not they are run. These mentions went outside the scope of the information behavior and activities that occurred within groups' threads.
- LibraryThing user Betty mentioned that most of the group reads she had been part of were not organized by LibraryThing themselves, but within groups by ordinary members. "Like, the group reads, science fiction group reads that I was part of. The LibraryThing staff had nothing to do with that." They did organize a group read that she discussed at some length in her interview, this being "the first time since I joined that I've seen them do something like that. I think it was a trial…"
- References to the organizational features of LibraryThing or Goodreads; or to the activities of other organizations such as publishers, booksellers, or libraries; that did not involve much normative information behavior or activities within an information

world. For example, much of Tanya's examination of the metadata for an author's book or of his profile was not normative, although it could be considered information behavior. Kevin referenced his book being released on Amazon and the traffic another author friend received to her book on that site, which only implicitly included any information behavior (the writing of the books in question). Miriam ordered "different copies" of a book "from my library system," which did involve information behavior that could be considered normative for her: checking out books from her local libraries. This was, however, a case of a minimal role being played by LibraryThing as a site for her information behavior and activities. Its role was more significant as an organizational resource furthering Miriam's activities.

- Comments on other book organization web sites that did not fall under consideration of information behavior and activities occurring within a site of an existing or emergent social world, such as the views of LibraryThing held by Goodreads users Tanya ("LibraryThing has a *very weak* social networking component. It's not in any way, shape, or form competition to Goodreads") and Rachelle ("…from what I've heard that one actually costs money").

- Comments on other social media or social networking web sites that, again, did not fall under consideration of information behavior and activities occurring within a site of an existing or emergent social world. There was little of this, with the most notable occurrence being Kevin's comments on Facebook as an organization with motives that are not in line with his (see the discussion of external technologies in 4.3.9.2 for a few more examples).

- Cases where the presence of LibraryThing or Goodreads as an organization was much more prominent and important than any implied role as a site. For example, Rachelle mentioned one reason she wrote a review of each book she read and posted it on Goodreads was so she could look back "ten years from now … and go, 'OK, well ten years ago I hated that book, or ten years ago I loved it….'" This displayed faith that Goodreads as an organization would still be around in ten years; its role as a site for the activity of reviewing was much more implicit. Other examples included discussion of Amazon's recent acquisition of Goodreads and of the roles played by LibraryThing and Goodreads in the running of the groups.

- A brief mention of LibraryThing in Tanya's interview when I asked her a question about it instead of Goodreads—the digital library she was being interviewed about—before correcting myself. She said "actually I do use LibraryThing, but … I use it differently." No elaboration and no discussion of its potential role as a site for information behavior and activities took place.

4.3.7.2. Emergent. Fewer emergent organizations were mentioned in the interviews. Those that were included groups that had changed platforms or settings, transcending a particular environment and organized themselves as social worlds to further their activities. Tanya's "most important group" had first existed on AOL, but AOL abandoned its group platform; as a result, she "was the one who recommended that this group come to Goodreads." It did so, in the process establishing the group as an emergent organization independent of either AOL or Goodreads. Another group she was part of was discussing potential transitions off of Goodreads, engaging in a similar emergence process as it had become an organization independent of the platform. While the private LibraryThing group Sam was part of had not switched platforms, the social world associated with it had moved from a previous public group to the current private group. He held an unofficial role in recommending people to join the group or not, and someone else had taken the lead on moving the group from public to private in the first place, making it seem like an emergent, but informal, organization had formed to further the private group's activities.

In other cases, interviewees treated their groups as emergent organizations in the language they used to describe them. Some users from Goodreads considered the groups' level of independence from the Goodreads administrators, with "their own structure and their own rules" (Tanya), as an indication that they were emergent organizations in and of themselves. While Rachelle did not consider most of the groups she was part of to be organizations, there was the possible hint that one larger group might be because it might have "different threads that might create sub-communities." Kevin kept his thoughts on a potential emergent organization out of the hobbyist author and writing Group I on Goodreads to an informal level, commenting that "it almost feels a bit like, you know, a social gathering … call it a virtual social gathering." Social gatherings may have loose organization at times, but the simile implies a degree of emergence of Group I as an informal organization looking to further its activities. LibraryThing users raised other factors that could be indicative of an emergent organization, including

- a "resource-like" approach (Lindsey), where the group focused on providing information about given topics;

- "little subgroups [existing] within" a bigger community (Betty), similar to Rachelle's ideas about one of her Goodreads groups;

- activities organized outside the group's online boundaries, such as the secret Santa exchange related by Melissa in Group C or the collections of money and books Ann and Miriam mentioned were set up for particular members;

- pages or threads that introduce the group, its rules, and its members (as existed for Group C, per Melissa); and

- "connections above and beyond" reading the same books (Ann).

4.3.8. Sites

Along with social norms, information value, and information behavior, sites were one of the most frequent phenomena mentioned or implied in interviewees comments. Sites in both existing and emergent social and information worlds were discussed. Many interviewees related their perceptions of the sites they used to engage in information behavior and activities as existing or emergent communities, and a few cases of sites fell into a middle ground that could be considered both existing and emergent.

4.3.8.1. Existing. Many users made references to LibraryThing and Goodreads serving as sites for information behavior and activities, with this taking place within the existing social worlds of users of the two digital libraries. Taneesha felt the role of Goodreads was a vital one in facilitating her interactions:

I mean, I would not be a part of the group or I would not know these people if it did not provide different groups to be a part of.

Taneesha felt Goodreads, as a site encouraging information-based interactions around particular topics, was necessary to connect her to the group she was part of, talking about YA literature. She further clarified later in the interview (and as mentioned in section 4.3.3.4) that she saw Goodreads as "the web site *to* find new books, and to discuss books." Tanya commented on the classification of books provided by Goodreads members, using Goodreads as the space to complete this task in. The set of people that she said had left LibraryThing and come to Goodreads to engage in social networking could be considered to be using the site for this activity within an existing social world they had begun to cohere with.

While most of Ann's interactions could be considered to be within emergent social and information worlds (see the next subsection below), her group memberships on LibraryThing were quite broad in their distribution, and at one point during the interview she could not remember which group a particular discussion thread was in. From this it seems clear that she valued the digital library and the role it served across all the conversations she took part in to facilitate and support them, no matter which social or information worlds were at play.

A few users discussed other existing sites where interactions could take place. Kevin mentioned a different online community, a space where artists of all kinds could post their work and portfolios for comment and distribution, that he frequented. As stated above, he had posted "some of the things [he'd] written" on the other site, but had not done so on Goodreads, despite a group he was part of—Group I—providing that ability. Both sites could provide a space for the kind of information behavior he was engaging in, but for reasons that were left somewhat unclear, Kevin chose to post his work to the other online community and not to Group I. He had made a choice—based on objective reasons or subjective preference—which helped determine the role that Goodreads and Group I played in his information behavior and his experience within the community of Group I *and* the broader social world of hobbyist authors.

Jennifer brought up her use of "a site called BookCrossing where you basically give books away … and then you can track where they go." As stated in section 4.3.5.4, she valued this site more than LibraryThing because she found the latter difficult to use and navigate. There was some crossover in the people she saw on each site, but LibraryThing's role was not central, and it did not serve as her chosen site (in both social world and Web terms) for much of her interaction-focused information behavior and activities; most of her actual interaction about books was in BookCrossing's discussion spaces, not LibraryThing. Jennifer did say if BookCrossing was to go away LibraryThing would be her next choice, although she "would end up going over there and probably bullying people into fixing the forums so they could be a little more user-friendly."

Rachelle discussed the importance of a site for information behavior and activities fostering interaction:

> I think [interactions] could move somewhere else, as long as the other site *fostered* that
> kind of interaction. Whenever the whole Amazon [as new owners of Goodreads], you
> know, deleting reviews thing happened, there were a lot of people that tried to see if they

could move stuff onto BookLikes, I believe, is the web site? And … the thing with BookLikes is, as great as it is, it's blog style. And with it, the interactions are not as much among your friends as it is among everybody that, you know, just subscribes to look at your blog.

Moving from Goodreads was something many users wanted to do, but Goodreads had advantages as a site for information-related activities and behaviors within existing and emergent communities. The blog style of BookLikes did not provide for the same interactions among friends as Goodreads; it would be a different social and information world, and not one that Rachelle and others might want to be a part of. She later characterized "some blogs [as] more of talking to people instead of with people," further elaborating on the reason Goodreads could foster interaction better than she felt BookLikes would.

Tanya brought up moving the opposite way, *to* Goodreads, believing many former LibraryThing members had moved over to Goodreads "because they were interested in the social networking," as a normative information behavior—incorporating information and knowledge sharing with other users—and information-related activity shared within an emergent information world. In her view, Goodreads as a site was more supportive of and would better facilitate this practice. As learned from other interviews there are users of each digital library who use it in this way, and users who have left Goodreads for LibraryThing and vice versa (or are thinking of doing so) for varied reasons.

As mentioned above, Taneesha felt Goodreads was the only place that could facilitate and foster the kind of discussions she was looking for around books. She felt "a Facebook page" would not lead to people being "as interested … and as active as they were" on Goodreads. Further comments she made on the technologies provided by the digital library (see section 4.3.9 below) were indicative of coherence around the site, but without having considered other sites—such as LibraryThing—that could also serve as a space for her chosen information behavior.

While Rachelle's comments implied potential conflict in how BookLikes might support information behavior, and Tanya and Taneesha made personal arguments for why Goodreads supported information behavior better than other sites, Betty had direct experience with other users deciding that a LibraryThing group was not for them, due to the conflicts in social types and information values (see sections 4.3.4.1 and 4.5.3.4) that had led them to leave "en masse." Both the new forum they joined (which was implied to not be on LibraryThing, but its location

was never made clear) and the existing group served as social and information worlds where the users interacted with each other and engaged in information behavior and activities; while the break-up of the group was mostly about values and types, it lowered the degree of convergence and reduced the level of facilitation, as a site for information behavior and activities, the LibraryThing group could provide. Betty, for one, was now using the group less as a result.

Melissa made brief mention of the physical space of her local library, saying she goes there often but finds it hard to meet people who share her interests there. In her comment is the implicit notion of a library serving as a site for information behavior and activities, with looking for books of interest to oneself being a normative behavior for library-goers. However, Melissa had not found anyone with the same information wants and desires, only those sharing the same broad information-seeking task. LibraryThing was a more successful space and site for her; as mentioned earlier she found a group that turned into a convergent and emergent social and information world, facilitated by LibraryThing and the community of Group C.

4.3.8.2. Emergent. When users in LibraryThing and Goodreads groups engaged in information behavior and activities, in many cases the group could be considered part of the digital library serving as an emergent space—an influential, standard boundary object—for this information behavior. The degree of the emergence varied from case to case, but most users found they were engaging in new behavior, in a new space, that would not have been possible without the LibraryThing or Goodreads group and web site bringing them together.

Rachelle's discovery of sharing common values with others over "the same books that I read" (see section 4.5.3.2) led her to engage in shared information behavior with those users—"I can talk to them about it"—within the space of the groups she joined and participated in. One of those groups, deemed her "favorite … to interact in," included "a great atmosphere"; she got to know a lot about the people in the group and what they value (as seen above), adding to the sense of an emergent social world wherein Goodreads and the group served a role as boundary objects, bringing users together.

Over on LibraryThing, Sam referred to the "exchange [of] ideas about a writer you like or something like that" as a potential behavior he might engage in, and in relation to this "the one group [and] LibraryThing's role is to—the little extra I would say is that they provide a space where you can choose who to be with, in a sense." Here Sam felt that a new space had been made from the group for particular information behavior with specific people; it was the

combination of these that made it a successful role, in his view. Melissa, as mentioned above, found common information values (like Rachelle), information behavior, and activities to converge, facilitated by LibraryThing and Group C acting as a site for these to take place in the context of an emergent social and information world. Ann's experience on LibraryThing was similar; she found four or five people who shared interests and values and who all participated in a thread about gender roles in fantasy fiction, with LibraryThing supporting this emergent social and information world.

Miriam's use of LibraryThing was perhaps the most insightful case of a site being created for an emergent social and information world's information behavior. Miriam had an interest in the illustrations from editions of a early 20th-century children's book, and decided to create a thread as a place to organize her overall project and to discuss it with others. She related the process she went though as part of her interview:

> So I started [the new thread] in the group that I'm most comfortable in, and then I went and invited a couple of people, that I know might not have been in that group, but [I] know that they like [the book]… and invited them to come and participate.

A bit later in the interview, she added:

> And, I'd had some interactions with a couple of people who helped to set up series and change the Common Knowledge [metadata], and we'd talked back and forth about that sort of thing before. So I already knew there was an interest there.

After I asked if anyone else joined in, Miriam responded by saying:

> It's interesting because, other people mentioned it to other people, and would give a link to the thread, and so they found it … through other people talking about it. And joined the group, and either lurk and enjoy it or actually participate.

The thread that Miriam created became part of a emergent social and information world. It crossed existing group boundaries; brought in people from a pre-existing, emergent world from the past that had already shared some values and interests; and served as a emergent and influential space and site for information-related activities and behaviors related to the illustrations in editions of the book. This latter role made the thread a clear boundary object, with the processes of translation, coherence, and convergence on display through Miriam's actions and the contributions of others.

190

While not at the same level as Miriam's actions, back on Goodreads Rachelle recollected a few cases of the moderator of the historical fiction group she was part of creating new threads when new topics came up (as mentioned in section 4.3.6.3). This first began because tangents were possible in the main threads:

> …we have the book threads but we do not want to go too much off on a tangent, so … she [one of the group moderators] created the [random / off-topic] thread.

The moderator's activity did not stop there, as Rachelle continued:

> And then sometimes when people do go off on tangents, she'll create a thread. Like we ended up with a theater and opera thread, were we were talking about theater and opera [in the random thread] and [the moderator] said, "well maybe we should start a thread devoted to theater and opera if so many people want to talk about it!"

I asked Rachelle if this happened often, and she replied that

> …it happens whenever anybody goes off on a tangent that seems like it could … like, if enough people are interested—like the theater and opera discussion started as a discussion between three different members, and then when the thread was started it was like all of a sudden, you know, seven or eight people started regularly posting on the theater and opera [thread]. And the mod's like, "wow, a lot of people here like theater and opera," you know! … It just kept going for so long, she's like, "well I'll just dedicate a space to it."

A similar occurrence happened with an on-topic discussion of author Bernard Cornwell, which the moderator split off from group readings of his work so that there was a dedicated thread for discussion of this popular historical fiction author. In both cases, the moderator had created a site (in social world terms) for what had been non-normative information behavior and activities to become normative within, and where the group could facilitate and support it, with the thread serving as an emergent information world for discussion of theater and opera or Bernard Cornwell, respectively.

4.3.8.3. Perception of existing / emergent communities. A few users explicitly characterized—without prompting—the spaces where they engaged in information-related activities and behaviors as what were or could become emergent "communities," including Goodreads user Tanya and LibraryThing users Lindsey and Ann. (See also the discussion on a sense of community in relation to information values in section 4.3.5.3.) In contrast, Goodreads

user Taneesha and LibraryThing users Jennifer and Betty perceived themselves as interacting with those from multiple other *existing* social and information worlds when on the respective site. Although Betty saw LibraryThing as "one big community" when it came to "the way that you behave [and] the way people interact," and Jennifer seemed to hold that view to an extent, the rest of their interviews implied they did not see it to be as coherent as others did. Goodreads user Kevin and LibraryThing user Melissa felt like they were part of one emergent social and information world, the group that they spent most of their time in. Melissa felt that the community of Group C had "splinters" when people had different interests and engaged in different threads. Along with Tanya, Lindsey, and Ann (all LibraryThing users), fellow LibraryThing user Miriam and Goodreads user Rachelle felt they were part of multiple emergent social and information worlds, given their participation in multiple groups and threads. Of this group, Rachelle did not see the digital library as a whole as an overarching community, while Miriam and Lindsey did, and Tanya and Ann expressed strong considerations of it as such. Miriam's view of potentially overlapping and nested communities was elaborated on through her discussion of the divergences in topic that occurred within the groups and threads she was part of (see section 4.3.6.3). LibraryThing user Sam could not decide whether the private group he was in was best perceived as one convergent community (and emergent social and information world), or multiple communities (existing social and information worlds) that intersected with each other and were nested within a broader community (an emergent social and information world); analysis of his interview implies either is possible, but that substantial convergence existed within the emergent social and information world of the private group.

For Lindsey, when the topic of community first came up she said she "would not necessarily [have] thought of it that way, if you had not described it that way." When asked later in the interview about the nature of the group she was in, she replied "it's definitely a community," albeit she maintained the distinction that it was "a virtual sense. It's a virtual community, it's not a, you know, a real life community." Later still, she gave what could almost amount to a textbook definition of a site emerging, within an emergent social and information world: "…people found, I guess, other people that they shared interests with and started a group." By attracting other people like Lindsey to their groups through shared, common information behaviors, the groups—and by extension LibraryThing—became emergent and influential spaces for those behaviors within an emerging social and information world.

192

Tanya told me she had "met some of these people in person," implying that led the emergent social worlds of one or more of the groups she was part of had become a community to her. Ann was willing to call it "real community, rolling over into, very much into real life"; as discussed earlier in this chapter she valued and appreciated the ability to build connections beyond the common interest of reading a particular book, with this sense of community and discussions within the community facilitated through the groups that emerged from LibraryThing as sites for valued interactions, information behavior, and related activities.

4.3.8.4. Both? Importance of context. In a few cases throughout the interviews, users referred to sites beyond LibraryThing and Goodreads, but implied they were supporting the information behavior and activities of an emergent social and information world that used a group or thread in the digital library. For example, in the context of discussing the information behavior and activities of the private LibraryThing group he was part of, Sam mentioned that "I've never had a blog, but some, quite a few of the people have a blog … and they're posting their reviews [there]." The blogs could be sites for the information behavior associated with reviewing, and considered to be being used as a new, local standard for the emergent world of the private group. An alternative view would perceive the blogs as sites for an existing social and information world that overlaps with the group and LibraryThing in some way, such as the world of hobbyist authors.

> In another example, Betty had been a member of another online community, which was …not actually book-related in nature, and we actually formed a book group read, at one point, and did something fairly similar to [what is done on LibraryThing]. Just sort of on our own. … [E]ven though the group started as, for a particular game, it branched out all over the place, including a group read which lasted for about a year, until people got, you know, people get busy and whatever.

In this case, within the context of the other online community the group read was a site for an emergent social world to engage in new, convergent information behavior, as it was not part of the original intent or purpose of the group. From the context of LibraryThing, however, this was an external site, and the world of its users —including Betty—would be seen as an existing information world that cohered (or not) with LibraryThing. A political discussion she mentioned that occurred in the other community was both within an emergent world and an existing world, depending on the context used. Betty mentioned later on that one could "start something"—

meaning a discussion about books or a group read—on Facebook, if one had friends with similar interests; the word "start" implies an emergent world, and it would be in the context of Facebook, but not in the context of LibraryThing.

In the cases where something like this was seen in the interview data, I reasoned that the sites in question were external to LibraryThing or Goodreads, it was not clear that they should be considered in relation to an emergent world from the context of the two digital libraries, and my given definition of a site within an emergent world included the words "digital library" (which most external sites were not perceived as, although some could fit the definition being used in this study). This led to analysis as a site within an existing world, but was a theoretical wrinkle that will be discussed further in Chapter 5.

4.3.9. Technologies

Most interviewees mentioned using technologies, in some form, as part of information behavior and activities; overall this phenomenon appeared with moderate frequency, and occurred in the context of both existing and emergent worlds. Many of these were talked about in earlier sections of this chapter, where the technology influenced sites, organizations, information behavior, information value, social types, and social norms. (The relationship and distinction between sites and technologies, first discussed in Chapters 2 and 3, will be returned to in Chapter 5.) This section provides an overview of users' pre-existing and emergent technology use, beginning with their use of features of LibraryThing and Goodreads, then discussing their use of existing external technology, and finishing by examining their technology use in the context of emergent social and information worlds.

4.3.9.1. Existing use of LibraryThing and Goodreads. An important point in Taneesha's comments about why Goodreads was the best site and technology (in social world terms) for supporting her information behavior (see also section 4.3.8.1 above) was that she felt both the organizational features (cataloging, search, and other traditional digital library features) and the discussions and groups (social, online community-like features) were necessary for Goodreads to support her information behavior. As mentioned in section 4.3.5.4, when I asked her what she would think if Goodreads only provided discussion boards, she replied that she would miss the "one-stop shop" provided for the purposes she has: to find books, review them, and read and discuss others' reviews. In a similar vein, she did not want the discussion board features to go away and leave only the organizational features; both technology aspects were

vital for Goodreads to be a facilitating and supportive site for her information-related activities and behaviors. While Facebook was mentioned, other web sites that would have the same features and technology—including LibraryThing—did not come up in the discussion.

In a similar vein to Taneesha, Lindsey used a technological feature provided by LibraryThing, the "members with your books" list, which shows "who has the most books—either weighed or raw—in common with you"; she sorted it from least popular to most popular so she could identify people with similar interests in "stranger books" as opposed to *To Kill A Mockingbird*." Miriam mentioned collaborative use of the technological feature of the "Common Knowledge," the metadata and other material posted about a book that LibraryThing users could edit and contribute to (LibraryThing, 2013). Miriam also used LibraryThing's technology to connect some books together that belonged in a series. On Goodreads, Betty related a critical incident of interacting with an author over why his book had been classified—in an inappropriate way, in his view—as modern history, which implicated the metadata provided on the site through the technological features of Goodreads.

Kevin, a hobbyist author, mentioned that he "might use some of the Goodreads campaigns to try and drum up some publicity" for his book; this would involve using the technological features Goodreads has put in place for authors to use to promote their books in various places within the digital library and on the web site. I asked the other hobbyist author, Sam, if he used any of the features LibraryThing provided for authors, but he did not, saying "I do not know what they really offer, but, if I did know at one time I've forgotten"; he added that my question "may spur [him] to look into it."

Most, but not all interviewees used the organizational and cataloging features of their respective digital library with some frequency to manage their book collections, lists, and reviews. Goodreads users Tanya and Kevin and LibraryThing user Jennifer made particular use of these features, and a few of the long-time LibraryThing users had used the site when these features were all that were available, continuing to use them through to their interview date. LibraryThing user Ann's use of the cataloging features had fallen off some in recent weeks, but LibraryThing user Sam was the only user who explicitly said he did not use these features except on rare occasions to facilitate his group membership.

The ability to flag messages that violated the explicit norms and rules of the site was mentioned as being used—and useful—by LibraryThing users Melissa and Miriam. Melissa and

Lindsey addressed the technological limits that tended to have threads cap out at around "200 or so posts," per Lindsey, with continuation threads created when that happened (see also section 4.3.9.1 on norms). Concerns over loading times—mentioned by Melissa—led to this practice, seen in the content analysis (see section 4.1.5.6).

Explicit mentions of the ability to "friend" users on LibraryThing and Goodreads were not as frequent as one might expect. Of the Goodreads users, Rachelle and Taneesha made many mentions of the word in social network and traditional contexts; Kevin used both contexts but focused on the latter usage; and Tanya made brief use of each a couple of times. LibraryThing users almost all used the word in the traditional context; all of Sam, Ann, Melissa, Miriam, and Jennifer's uses were in this way. Betty used the word in the context of Facebook twice, but did not use it to describe the ability to "friend" on LibraryThing. Lindsey did not use the word "friend" or stemmed variations of it at all during her interview.

4.3.9.2. Existing external technology. Technology beyond LibraryThing and Goodreads was mentioned in interviews, including other competing sites (by Betty, Rachelle, and Jennifer), Web search (explicitly by Sam and implicitly by Taneesha), e-mail (by Ann), blogs (by Sam, Rachelle, Ann, and Taneesha), Amazon.com (by Rachelle, Kevin, Taneesha, Ann, and Jennifer), and the Kindle app and store (by Kevin). Apple's iPad was mentioned by Kevin, who used Goodreads on that device much more than any other, and by Jennifer (as owning one, but without further references to it).

Of these, Amazon merited some short discussion by interviewees in reference to seeing it in Web searches, purchasing books, and (from the authors) making their published books available there, but only blogs were discussed at much length. Taneesha, Sam, Rachelle, and Ann saw that blogs were of potential use within existing social and information worlds as an adjunct alongside LibraryThing or Goodreads. Taneesha and Ann focused on blogs as venues where people could post their opinions and let people comment. Taneesha mentioned "book bloggers" that would review and recommend books to their audiences, such that a blogger might become "that one go to person that [someone will] trust." Ann talked about authors and writers' blogs, and she stated "it does not necessarily get really interactive … I mean, yeah, things can develop, but yeah…" Sam's references to blogs were discussed at some length in section 4.3.8.4, and will not be repeated here, but he was also concerned if "they get a lot of readers." Rachelle expressed the strongest concerns of the three in saying that the blog technology in use by

BookLikes—a similar site she was discussing—might not provide the same level of facilitation for interactions as the group structure of Goodreads, the digital library she used:

> … if they had the structure of the site that would facilitate groups like that, then it could happen. But if it's blog style … you're not going to have groups like that, if all you're doing is posting your reviews and books blog style.

While her values and opinions were a factor—"… some blogs are more of talking to people instead of with people," she stated—when combined with the comments of Sam and Ann this indicates that blogs may not contribute to the coherence—the consistency and common underststanding—of existing communities and to interactions between people from those communities (to say nothing of the convergence and emergence of new communities). They may in some cases (as expressed in Taneesha's view), but care is needed in considering their role.

Many social media services and online communities were mentioned, sometimes prompted by interview questions based on participants' survey responses. Some of these mentions were complex in their invocation of the concepts of technologies and sites from the social worlds perspective, with some of users' mentions and activities incorporating both concepts, while others only focused on technologies. This complexity will be returned to in Chapter 5. Mentions of social media services and online communities by interviewees included the following:

- Facebook: Users referenced having been sent links via the site (Rachelle), having migrated a previous community to a private Facebook group (Betty), using it to interact with friends first made via a LibraryThing group (Melissa), the idea of the "like" (Ann), that is was lacking in structure to support book discussions (Rachelle, Ann, Taneesha), feeling overwhelmed by it (Melissa), using it for family (Ann), that they were not "a Facebook person" (Lindsey), and that they stayed away from it for privacy reasons (Kevin, Jennifer).
- Twitter: Ann said she dislikes Twitter "because it's just, yeah, that's just shouting at the void, that's not conversation"; she "follows a few people" but does not post herself. No other interviewees mentioned Twitter.
- LinkedIn: Kevin mentioned that it was his go-to professional social network, and Goodreads might become his social network "for the other side of my life," that where he is a hobbyist author. Betty had said she used LinkedIn on the survey and I

included it when summarizing her survey responses to ask about her use of social media, but she did not mention it in her interview.

- Pinterest: Miriam and Jennifer said they used it, Jennifer "a lot" as "her place to gather things so that I do not have to dust them, because I've downsized…" Miriam mentioned using it with her daughter to "pin pictures for each other, and we include comments to each other in the little descriptor place." She elaborated, when asked if she could use Pinterest for other purposes, that she would be unable to complete much of her illustration project on there because "you cannot post to their board [directly], you have to post to a particular pin," terming this a "primitive setup." She had invited another Pinterest user with interests in illustration "to join LibraryThing, and she came! And said, 'this is how I found you!' [laugh]" Betty had said she used Pinterest on the survey and I again included it when summarizing her survey responses to ask about her use of social media, but she did not mention it in her interview.

- Flickr: Melissa mentioned that "we used to post pictures to a Flickr account that we made up for [LibraryThing Group C]," but did not mention any other use. Ann did not mark Flickr on the survey, but said she "liked" it until "they kind of destroyed it a bit ago"; she still used it to make photos of her daughter available to her family in another country. No other interviewees mentioned Flickr.

- Skype: Ann mentioned using this to keep in touch with family and friends at a distance, but not for book discussions. No other interviewees mentioned Skype.

- WhatsApp: Ann made brief mention of this as an example of the kind of technology she saw as having potential use for book discussions, although "it would have to be a cast of people that you already knew, that you could sort of group together and throw conversations to." Ann was the only interviewee to mention WhatsApp.

- Digg / Reddit: Ann referenced the idea of "up-voting" content without naming a particular service or web site. It is present in multiple online services, but was popularized by the Digg and Reddit web sites. No interviewees mentioned these sites by name.

- Other online communities: Betty mentioned a private Web-based forum; Kevin mentioned a hobby community he had been part of and a community for artists he

198

still participated in; Ann mentioned the discussion boards of a massively open online course (MOOC).

4.3.9.3. Emergent. There were fewer mentions of use of the two digital libraries providing emergent and standard technology, as used in the information behavior and activities of emergent social and information worlds. Some referenced specific technology, and will be discussed first; then general comments will be reviewed.

Tanya, Taneesha, and Rachelle mentioned that users of Goodreads can use the "shelves" feature to create classified lists of books, an emergent behavior that they could do "any way they like," as Tanya put it. For members of the site, this becomes a semi-emergent social and information world where the technology is used as the standard means to create classifications, although the degree of emergence depends on how many people use a particular shelf as part of their information behavior and activities. As seen elsewhere in this chapter, authors can disagree with readers over this and Goodreads has begun enforcing certain rules and deleting shelves as a result; these activities may decrease the degree of emergence and of convergent use of the Goodreads-provided technology.

The use of profiles (discussed in section 4.3.4.8) by LibraryThing users Ann, Miriam, and Lindsey, and Goodreads user Tanya, invoked a technological feature that interviewees used to learn about other users who had posted to groups and threads. Because it encouraged establishing social ties and connections with other users, this feature could lead to an emergent social and information world being created; the technology served as an emergent, standard boundary object that could be used for doing so. Rachelle's discussion of a moderator creating new posts as new topics came up (see section 4.3.8.2) showed use of the discussion board and threading technologies provided by Goodreads (in this case) to support new, emergent social and information worlds. Ann made brief mention of the groups feature and the ability to post private messages for other LibraryThing users as ways they had enabled interaction and information behavior in both existing and emergent social and information worlds. She referenced PayPal as a means to organize a collection for a member's husband (see section 4.3.6.4), another example of technology being used to organize an activity for an emergent social and information world.

Melissa mentioned the ability to post pictures in LibraryThing messages as something that "people forgot how to" do, since "you have to remember all the code … in the midst of the thread." She remembered that threads would sometimes get "too heavy with pictures, [and] some

people [would] have a lot of trouble loading them." She said she had not seen many pictures posted "in a while" in Group C, but pictures were common in her thread on book illustrations, which is not too surprising given the content of interest; she considered this "a really nice feature." The pictures are a technological feature that could support information behavior and activities within an emergent social and information world, but it appears their use may have diminished over time, at least within one LibraryThing group.

Linking—as seen in the content analysis—is more common, although not mentioned much by interviewees. Ann mentioned that pages on LibraryThing for authors and reviews were linked to and many external links were made, all supporting interaction and information behavior within groups in an emergent fashion. Miriam mentioned the links that other users had sent to each other to inform them of the thread she had started (see section 4.3.8.2). She used the author and book pages to find cover images for the editions she was posting illustrations from. Miriam found a newer feature "on each work page that now tells if there are active discussions on that book," and provided links to them, to be "*really* cool." The ability to post pictures and links, and have her discussions and those of others connected automatically to the pages for books in the digital library, supported and facilitated her information behavior and her creation and strengthening of an emergent social and information world.

General comments referring to technology supporting emergent social and information worlds were made by interviewees. Some were quite simple; for example, Sam said LibraryThing had facilitated interaction "just by being available"—that is, having the technology present to interact online—and by "put[ting] a lot into their design." Usability concerns caused the opposite reaction by Jennifer, who used the competing site BookCrossing more than LibraryThing because she found the latter hard to use and navigate (see sections 4.3.5.4 and 4.3.8.1). While Miriam showed clear appreciation of the LibraryThing site and had done a lot to create a community there, she felt having a place for discussion was "a given," implying she may feel that its use of technology to provide this is easy.

Others had more complexity behind their thoughts. Rachelle stated the following as the reasons she felt Goodreads had been successful:

> …it's just they had, you know, the free site with really good structure that facilitated not
> just reviews of books, but also groups, where you could interact with others. They gave

the readers freedom to pretty much do whatever they wanted with the structure, and that

is the formula; then, you know, they've been successful at keeping people.

The structure that Rachelle referred to was not solely technological, but the technology of Goodreads played a big role in allowing for book reviews, groups, and interactions, and the perceived flexibility allowed for users to form many different groups. While the degree to which this technology has supported the emergence of these groups as new social or information worlds varies from group to group, Rachelle's comment could explain a lot of the success Goodreads has had in recent years.

Melissa made a shorter, but similar comment about what technological features helped make LibraryThing work as well as it did:

But I know the idea of having your, having people set up discussion boards, based on their interests and being able to draw people in that share that interest, is really a feature I cannot see working in many other ways…

While the sense of what makes LibraryThing work in this comment goes beyond the technology to sites and information values, the technology is at the root of this: some programming and system configuration went into allowing users to create discussion boards, and it is how that feature is set up that Melissa feels has contributed to LibraryThing's success.

4.3.10. Open Codes

Four phenomena not explicitly part of the codebook at the beginning of the study were seen in the interviews, to which open codes were applied as per the qualitative analysis procedures detailed in section 3.7. Three of these were seen in the content analysis phase: other boundary objects, boundary spanners, and outsiders. A fourth phenomenon, lifecycles, was seen in a few interviews.

4.3.10.1. Other boundary objects. Many other objects, not connected with LibraryThing or Goodreads, served as boundary objects and were identified by interviewees. These included:

- *Books* were, by far, the most popular "other boundary object." This included their classification, as in the incident Tanya raised where there were multiple views of what an author's book was about and the genres it fell under. Books were explicit objects of common interest and discussion in many cases, with the social act of reading that LibraryThing and Goodreads provide increasing their status as boundary objects during their reading. This was most true in group reads. A few cases were

made specific to a genre (e.g. Rachelle mentioned historical romances), series (Narnia, in LibraryThing Group C, as mentioned by Melissa), titles (e.g. Kevin's second book, which had not been released), or editions (e.g. the multiple editions of the book from which Miriam was examining illustrations). Goodreads users Taneesha and Rachelle mentioned books in boundary object roles with some frequency in their interviews.

- *Writing* was referenced as a boundary object a few times, most often by the two hobbyist authors Sam (a LibraryThing user) and Kevin (a Goodreads user).

- A *web comic strip*, Rich Berlew's *Order of the Stick*, and one of its *characters* became boundary objects in a discussion of social types in relation to gender that Ann mentioned in her interview.

- The *illustrations* that Miriam was discussing and posting reviews of became a boundary object as other users responded to her reviews.

- *Book reviews* became a boundary object in one case where Kevin mentioned the relative praise (or lack thereof) he had received on Goodreads and Amazon.com, and in another case where Jennifer believed her reviews would be used by a publisher. Reviews serve as a negotiation between author and reader; as part of that process, Kevin explained his reaction to the reviewers' comments and opinions in the interview.

- A *library* was a boundary object for Betty, as she placed herself "on the waiting list at a … local library" for a book; since the list was long, she had "actually kind of forgot about the book until the library notified they had it," explaining why she did not begin a group read until many weeks after it had started.

- *The weather* was treated as a boundary object in one case where Rachelle and other members of one of her groups were "talking about the extreme weather that we've been having" in different locations around the world.

- *Web search results* were a boundary object in one case, when Taneesha referred to them in the process of "looking up a book" and finding a review or author page from the Goodreads site near the top of the results, often right before or after Amazon.com.

4.3.10.2. Boundary spanners. Few occurrences of a potential or confirmed boundary spanner were seen in the interviews. Rachelle explained that, in some situations, users might be part of two communities, but the degree of boundary spanning they perform could be low:

> …like I said [the people in Goodreads Group G] have a lot more romance in there, and, you know, there are people that like both, the romance and the non-romance, and they'll straddle the two groups. But they, you know, their participation in the groups will be, may be different as well, especially since [Group G] also has challenges and stuff like that …. So even if there's an overlap between people, it's not like the same people, you know, it's only a [small] overlap, as far as I know.

Rachelle herself was a member of at least four groups, with "three or four of the same people," and was knowledgeable about the norms, values, and behaviors of two of those groups; as such, she—and perhaps the others—could serve as a boundary spanner if called on to do so. Her comments indicate sufficient differences between groups that boundary spanning could be difficult, and she reflected elsewhere in her interview that Goodreads was not an overarching community. Nevertheless, she agreed that overlaps existed where a boundary spanner could sit themselves.

Betty uncovered similar overlaps between LibraryThing groups, but claimed there were not many people that crossed between the groups she was part of: she said "it's a totally different group of people that I run into" in each one. In such a case a boundary spanner might find it difficult to bridge the overlap, but it is possible, as proved by two other LibraryThing users.

Lindsey sometimes acted as a boundary spanner, saying

> … I might invite somebody I've come to know in another [LibraryThing] group because I think they'd be good for this group … and, I'd suggest that they read a couple of the threads and get an idea of what it's like, and see if it's something for them.

By serving as a bridge between the group and another individual, Lindsey furthered the emergence of the social and information world of the group and facilitated translation, coherence, and convergence between it and potential new members.

The other case of a boundary spanner was Miriam. In starting a thread on illustrations from an early 20th-century children's novel, she went beyond one group's membership to consider others who she knew valued illustrations or this particular novel, and invited them to join the thread she had created. Other users then passed the link around, serving as limited

boundary spanners. Some who joined the thread ended up joining the group, which was a greater level of coherence and convergence than Miriam herself had perhaps hoped for. Her social type as a boundary spanner was evidenced in her comment that she would introduce herself and her interests if she joined a new group. By spanning these boundaries between individuals, threads, and groups, Miriam had helped facilitate the emergence of a new social and information world around her thread and, to an extent, the strengthening of the already emergent social and information world of the group the thread existed within.

4.3.10.3. Outsiders. A few mentions were made of three perceived outsiders to the social and information worlds of users of LibraryThing and Goodreads. These were publishers (mentioned by Tanya and Jennifer), family members (in the form of Jennifer's husband, who made a brief interjection during her interview), and authors (from some perspectives). The latter, of course, was a source of much tension in Goodreads, and in notes made after Tanya's interview I wrote that I perceived authors to be both insiders and outsiders from her perspective, which— from further analysis—does not appear to be far from the truth.

4.3.10.4. Lifecycles. As analysis concluded, it became evident that a few examples of the lifecycles of social and information worlds were present in the data. While a longitudinal view was not examined or expected in this study, a quick review of these could be useful for planning future research. These examples included:

- Tanya's "most important group" had transitioned from AOL to Goodreads, at her recommendation. She termed this a "very successful" transition, with around 75% of members having moved with the group ("233 members" on Goodreads, vs. "300 on AOL"). Activities had changed to reduce in-joke use and special terminology unique to the group, to encourage new members to join from Goodreads (with "minor success with that").
- Kevin commented on Goodreads Group I that "it seemed to be, you know, a group of a few people, but the people change from time to time." He mentioned another online community that he had "participated [in] for about eight or nine years, and then at one point the site … as we would say, 'went south'… and eventually the site went down" a few years ago.
- Sam discussed the history of the private group he was in and how "most people in the group … were in a different group before that sort of slowed down," and so he knew

most of the members "very well." The other group had begun as a "very very lively" group when he joined it, but then

> …at some point a couple of people who were … constant posters, disappeared. Some unannounced, and some not. And, it was clear in a couple of cases that, you know, people were angry, offended by something; there were a couple of quarrels. … But that group still exists, but, I stopped writing on it because so little was happening, other than, I mean, there were very esoteric readings that were still being done, but otherwise there was not a lot of contact.

Sam was then invited to join the current, private group, which he did not realize existed until he received the invitation. He hypothesized that "someone must have said, 'oh hey, what about [Sam], … we [should] tell him, or ask him?'" The new group had many of the same people, but not all the same people.

- Melissa stated that Facebook had

> kind of [drawn] a lot of people out of [LibraryThing Group C] … usually they're sharing a lot of their news on Facebook, and mainly we've kept [the group] up for playing games, book discussions, things like that."

She discussed another point earlier in Group C's lifecycle:

> Originally, I think someone else had started it because of a love of the Narnia series, and, that person eventually disappeared, I think when the group was kind of in, at its highest point.

- Betty made mention that another online community she was part of had migrated over to Facebook in the last couple of years, but was "not as tight knit" or "as active anymore." When I made brief mention of the concept of lifecycles to her, she discussed the case where people may leave one community and join another:

> [I]f you've got people who are acquaintances … and you share something in common—I mean, over time people's interests change, and they'll go join a different community.

4.4. Summary

This chapter reviewed the findings from this research study, including discussion of the nature of phenomena observed in messages examined in the content analysis phase; participants'

responses to the survey; and the roles of phenomena in interviewees' use of LibraryThing and Goodreads as individuals and as part of groups and communities. Chapter 5 will provide a discussion and synthesis of these findings across the three methods and in relation to the literature, with an eye to drawing conclusions and considering implications from the data for theory, research, design, and practice in digital libraries and social informatics.

CHAPTER 5

DISCUSSION

This chapter presents discussion and synthesis of the findings presented in Chapter 4, in light of the research questions, phenomena of interest, and literature. It begins with a synthesis organized by the phenomena of interest from boundary object theory (Star & Griesemer, 1989; Star, 1989), the social worlds perspective (Clarke & Star, 2008; Strauss, 1978), and the theory of information worlds (Burnett & Jaeger, 2008; Jaeger & Burnett, 2010). Next, the research questions are answered, identifying the roles played by LibraryThing and Goodreads, as boundary objects, in translation, coherence, and convergence of existing and emergent social and information worlds. The chapter then turns to the implications of these findings, in context of the relevant literature, for digital library design and practice; research in digital libraries, social informatics, and information behavior; and theory in those same areas. After an important discussion of the limitations of the study, final conclusions are offered to summarize the dissertation, its findings, and implications.

5.1. Synthesis of Findings

This section synthesizes the research findings discussed in Chapter 4, which should be referred to for detailed, thick description of the results discussed here. A synthesis is presented for each of the phenomena from the theoretical framework, in the language of the framework, that points towards the answers to the research questions and the implications for research, theory, design, and practice. These implications are discussed in later sections of this chapter and summarized in section 5.7. The limitations of this study (see section 5.6) should be taken as context for this discussion; the findings are limited to users of the nine groups that were studied, but there is potential transferability beyond that context.

5.1.1. Translation

Translation has moderate importance in the roles LibraryThing and Goodreads play, as boundary objects, within and across the communities users from the nine groups are part of. Translation processes can be vital in addressing an information need, explaining circumstances that threaten to reduce coherence and convergence, or getting to know fellow group members. While not as central as other phenomena (such as information value) that contributed greatly to coherence and convergence, translation plays a vital role for many users; in many cases, translation processes become coherence and, given time, convergence. In other cases translation

can allow existing convergence or coherence to be maintained without great conflict. There were situations when translation did not lead to coherence, and those often led (or promised to lead) to problems and conflicts later on. Encouraging translation processes as a way to reach at last some level of coherence alleviates these problems and ensures a stronger community, backed by a stronger role for LibraryThing or Goodreads.

5.1.2. Coherence and Convergence

Coherence and convergence were measured as a separate concept in the survey; the findings there indicate at least some form of role is played by LibraryThing and Goodreads, as boundary objects, in facilitating and supporting coherence within and across existing and emergent communities for the users who participated in the survey. Of course, two other methods were used in this study to add to the survey findings—content analysis of messages and interviews with users—and these operationalized coherence and convergence using concepts and phenomena from the theory of information worlds and the social worlds perspective. Findings on these phenomena, from all three methods and as synthesized, are related in the subsections below.

5.1.2.1. Social norms. The findings show, for users from the nine groups, a strong importance placed on social norms in the roles of LibraryThing and Goodreads in relation to processes of coherence and convergence of existing and emergent social and information worlds. Having at least coherence and a translated understanding around norms is necessary to prevent major conflict, which may lead to a lesser role for the digital libraries. Convergence of norms is most often positive, encouraging fewer conflicts and greater maintenance of a role for LibraryThing and Goodreads and for the group. Too much convergence may lead to groupthink (see e.g. Tsikerdekis, 2013) within one community and a potential lack of coherence, or ability to translate and reconcile meanings and understandings, with other communities. Multiple interviewees' comments and multiple messages from the content analysis suggest that users, moderators, and administrators should work towards convergence of group-level social norms while ensuring that at least some social norms are coherent across their communities, should there be cross-community roles for LibraryThing and Goodreads to play in users' activities.

5.1.2.2. Social types. Overall, the importance of social types is weaker, in most cases, than most of the other phenomena for explaining the roles of LibraryThing and Goodreads within and across communities for the users of the nine groups. Much of this can be ascribed to the

lower levels of comfort users display in typing others in public (as seen in the content analysis) and in owning up to explicitly doing so (as seen in the survey). While they were willing to type in the interviews, the strongest typing remains of outsiders and stronger ties; weaker ties are typed less often, implying a role again of lack of comfort. Social ties, as distinct from types, play a larger role; this is clearest in the discussion of sites below (in section 5.1.3.1) but is embedded in many of the other findings and is evident here. Getting to know one another is more of a process of establishing social ties than socially typing others. While this activity implicitly strengthens the role for LibraryThing and Goodreads in the community, the level of facilitation is not as high as some other behaviors. Nevertheless, if the ability to connect to others online and learn about them and their identities through profiles did not exist, it might lead to less convergence, and social ties are crucial in the information behavior and activities of many members of the five LibraryThing and four Goodreads groups.

     5.1.2.3. Information values. Information values are an important factor despite the survey findings showing no significant role played in them, for the users who participated in the survey, by the two digital libraries. Analysis shows that perfect coherence or convergence of information values is not required for them to be a factor, possibly a strong one, in the roles LibraryThing and Goodreads play as boundary objects for users of the nine groups. Despite differences, communities form that users feel a part of and value from emotional, cultural, and informational perspectives. Analysis implies that coherence and convergence of information values may not be something most users are explicitly aware of; instead, these processes may be "invisible work" (Star & Strauss, 1999) that take place behind the scenes and only become evident when users reflect on how the community has gotten to where it is at (as many did as part of the interviews).

     5.1.2.4. Information behavior and activities. Information behavior and activities play a clear role in the existing and emergent communities of users from the nine groups, and LibraryThing and Goodreads play a role in facilitating and supporting that behavior, including discussion of everyday life activities (Savolainen, 1995). The role is not always one that is always manifest—users' social ties are sometimes more prominent—but the survey findings and discussion with interviewees help confirm there is at least a moderate role for LibraryThing and Goodreads here within the nine groups (see also the discussion of them as sites for supporting information behavior and activities in section 5.1.3.1 below). Convergence is strong enough

within the communities that the list of behaviors and activities from the content analysis and interview phases includes some differences due to the different communities referenced; the role played by LibraryThing and Goodreads is still similar. A factor in this is the distinction between an information behavior—as defined in LIS and by the theory of information worlds (Case, 2012; Jaeger & Burnett, 2010)—and an activity—as defined by the social worlds perspective (Clarke & Star, 2008; Strauss, 1978). For some interviewees, most of their examples of information behavior and activities are more compatible under the latter than the former. This has potential implications for theory and future research that will be discussed later in this chapter.

        5.1.2.5. Organizations. Synthesis of findings indicates moderate and lesser roles played by LibraryThing and Goodreads, as boundary objects, in the organizations of users from the nine groups. There are a few caveats to this. First, when users perceive of their group or community as an organization, they could perceive LibraryThing or Goodreads as helping to facilitate and support it, despite analysis using the social worlds perspective (Clarke & Star, 2008; Strauss, 1978) suggesting there was no organization or a short-term, temporary one. Second, the role as boundary objects for existing organizations can be stronger depending on interactions, translations, or coherence occurring between the worlds of those organizations and the digital library. (In the case of LibraryThing and Goodreads as existing organizations, the role is of course necessary.) Third, the role for organizations that exist as sites for information behavior and activities is stronger in most cases (see also section 5.1.3.1).

5.1.3. Boundary Objects

        Boundary objects were operationalized in the qualitative methods (content analysis, interviews) using the concepts of sites and technologies from the social worlds perspective. In the survey, they were measured using a separate scale in addition to scales for sites and technologies. The scale for boundary objects was found to have poor reliability and was dropped. This section focuses on the findings for the phenomena of sites and technologies, from all three methods, and their relation to the roles of LibraryThing and Goodreads as boundary objects in the existing and emergent communities of users from the nine groups. Distinctions in the relationship between sites and technologies were also uncovered from the interviews, and are discussed later in this chapter.

5.1.3.1. Sites. The lower levels of coherence associated with sites seen in both digital libraries and of convergence associated with sites in LibraryThing as part of the content analysis may be a result of different group experiences than those of the survey participants and interviewees. Although all LibraryThing survey participants had seen the survey because they had posted in one of the five groups, visited it during the recruitment period, or posted in a thread analyzed during the content analysis, the primary groups they were part of may not have been a group selected for the content analysis; this is borne out in only one LibraryThing interviewee choosing a critical incident known to be from a selected group (Melissa in Group C). The role of LibraryThing and Goodreads serving as sites is strongest, for users from the nine groups, in those cases where groups have already converged on other phenomena, but by providing a common space for users to get together they serve a moderate, yet important role as boundary objects between their existing communities. Not all participants would agree due to bad experiences (Betty) or a deliberate choice to not engage as much (Taneesha, Jennifer, Kevin to a minor extent). LibraryThing and Goodreads must choose whether to address the desires of these kinds of users to use other sites as spaces and places to engage in their activities of choice. If they would like to play a continuing and successful role in the activities of *all* of their users and user communities, then accounting for the use of other spaces and environments is necessary.

5.1.3.2. Technologies. Indications across all three methods were that technology is of moderate importance to the role LibraryThing and Goodreads play for users of the nine groups, because the technology implemented allows users to discuss and interact, organize and catalog, and for the digital libraries to exist as *digital* libraries and *online* communities. Coherence appears higher than convergence for most, although a few users use technological features to support the emergence of new social and information worlds. This is most true of boundary spanners (Brown & Duguid, 1998; Leonard-Barton, 1995; Levina & Vaast, 2005), who mentioned this kind of use—with emphasis on linking—more often in the interviews and engaged in it more in the content analysis. Such use makes sense; since boundary spanners are already cognizant of the boundaries of groups, communities, and the two digital libraries as a whole, they are more likely to have the site play a strong role as a technological boundary object as part of their behavior. Finding ways to encourage users to cross the boundaries and be cognizant of the multiple communities—which overlap and nest in many cases, but not all—that

exist around LibraryThing and Goodreads would lead to greater technological convergence and a stronger role for the two sites as technological boundary objects.

5.1.4. Other Phenomena

From the content analysis and interviews three emergent phenomena appeared: other boundary objects, boundary spanners, and outsiders. Lifecycles only appeared from the interviews. Findings analyzed under that open code that were analyzed as falling elsewhere were included in the discussions above; findings only relating to lifecycles, while of interest in the context of potential further research, do not have direct relevance to the research questions in this study and are not discussed further here.

5.1.4.1. Other boundary objects. Various other boundary objects play a role in the social and information worlds of users from the nine groups, including books, web sites, online resources and articles, unpublished writing, book reviews, web search results, a publisher, a library, the process of receiving books for review, the weather, a web comic strip, and illustrations. These span much of the range of boundary object types referenced in the literature (Carlile, 2002; Star & Griesemer, 1989; Star, 1989, 2010), albeit Star called for consideration of multiple categories of boundary objects beyond those used most often (Star, 2010; Zachry, 2008). Further theoretical considerations around the potential role of these other boundary objects and a sociotechnical view of boundary objects are discussed later in this chapter.

5.1.4.2. Boundary spanners. A few examples of boundary spanners (Brown & Duguid, 1998; Leonard-Barton, 1995; Levina & Vaast, 2005) were seen. Most of this spanning was across two or more groups within LibraryThing or Goodreads, as seen with Jared in the content analysis and Lindsey and Miriam in the interviews. In some cases, new group members explicitly thanked other members for inviting them or introducing them to the group; such messages were not discussed during the interviews, but may have occurred with the members Lindsey and Miriam invited to join groups and threads. Differences between groups can (as Rachelle alluded to) make boundary spanning difficult, but the benefits in doing so are evident in all the cases seen. These benefits extend to the emergent communities that were strengthened through boundary spanning activities and to LibraryThing and Goodreads, which play an important role in providing a framework for the occurrence of boundary spanning—and the attendant translation, coherence, and convergence processes—and for supporting it among users from the nine groups.

5.1.4.3. Outsiders. In the interview data a few outsiders (Chatman, 1996) are mentioned, with the dual role of authors as insiders and outsiders in different contexts and from the perspective of different users emerging as one finding. The content analysis data includes a few mentions or allusions to outsiders by users of the nine groups, including members' pets and family members who did not understand users' book-loving culture. There was another dual role in the case of Melanie, an inactive member of the community around LibraryThing Group C who still visited on occasion and was, in terms of the system and its technology, still a member of the group. Melanie's roles were more understood and supported—within the group and by LibraryThing—than the complex roles played by authors in Goodreads. Coherence of the latter was a more difficult problem than sick cats or cultural outsiders, since authors must play a key role in the larger social and information world of publishing.

5.2. Roles Played By LibraryThing and Goodreads

This section addresses the research questions for this study, working across all methods and all phenomena to report the big picture in relation to the research questions. As stated in Chapters 1, 3, and 4, the two research questions driving this study are as follows:

RQ1. What roles do LibraryThing and Goodreads play, as boundary objects, in translation and coherence between the existing social and information worlds they are used within?

RQ2. What roles do LibraryThing and Goodreads play, as boundary objects, in coherence and convergence of new social and information worlds around their use?

Three categories or types of role are played by LibraryThing and Goodreads, as boundary objects, in the existing and emergent social and information worlds of users from the nine groups. These are:

- *Structure*-based roles, where LibraryThing and Goodreads facilitate and support translation, coherence, and convergence through the establishment of community and organizational structure. This role was found for both RQ1 and RQ2 (see sections 5.2.1.1 and 5.2.2.1 below).

- *Values*-based roles, where LibraryThing and Goodreads facilitate and support translation, coherence, and convergence through users sharing information values. This role was found for both RQ1 and RQ2 (see sections 5.2.1.2 and 5.2.2.2 below).

- *Social network*-based roles, where LibraryThing and Goodreads facilitate and support coherence and convergence through the establishment of social ties and community culture. This role was found for RQ2 (see section 5.2.2.3 below).

The following sections answer RQ1 and RQ2, discussing each of the roles identified above and how that role comes about in the context of relevant literature. Detailed discussion of facets of the roles and findings that may impact or lead to recommendations for digital library design and practice; research in digital libraries, social informatics, and information behavior; and theory in those same areas, relating the findings to further literature, is presented in the sections that follow.

5.2.1. RQ1: Roles in Existing Communities, Translation, and Coherence

5.2.1.1. Structure-based. When LibraryThing and Goodreads serve as organizations, they play a (necessary) role in the existing social and information worlds of users from the nine groups, given that they are engaged in some form of information behavior or activities on the site. The strength and exact nature of such a role, and how successful LibraryThing and Goodreads are at facilitating it as boundary objects, depends on the depth of users' activities and how much or how little they adapt the digital libraries to their behavior and vice versa. Those who are heavy users of the organizational features (lists, searching, cataloging, etc.) of the site, but do not use the digital library much as a place to interact—such as LibraryThing user Jennifer—see it serving a stronger structural role as an organization and as a place *to* organize information through such structure. This role hearkens back to early views of digital libraries as collections of content (Kahn & Cerf, 1988) or as organizations providing resources and services (Waters, 1998, as cited in Borgman, 1999, p. 236).

Users who spend more time invested in the groups feature and other spaces for social interactions on the site do not see LibraryThing and Goodreads serving a structural role as an organization. In some of those cases the digital libraries serve a moderate, yet important structural role as a boundary object and site for information behavior within the existing social and information worlds of those users from the nine groups. Those who choose to use other sites for other information behavior or not engage as much in interactions weaken this role; LibraryThing and Goodreads are not always perfectly adaptable to their worlds. Others stressed in the interviews how the sites (in both social world and web senses) fit their chosen and valued information behavior and activities, implying high levels of coherence and a stronger role (if not

as strong as in the context of some other phenomena) for LibraryThing and Goodreads as boundary objects in those cases. For many of these same users, the digital libraries serve a structural role in convergence, due to serving as a site for normative information behavior and activities in emergent social and information worlds; see section 5.2.2 below for more on this.

The use of "fit" here—stemming to an extent from Star, Bowker, and Neumann's (2003, p. 244) view of convergence meaning that "use and practice fit design and access"—speaks to the process of aligning a system with its audience, present in most system design tasks be the view sociotechnical or not. In the context of digital libraries and their communities, Van House's (2003, p. 290) argument that they must "fit with … [existing] practices" echoes this. A fit should not be forced by enforcing community or technology on people (Brown & Duguid, 2002; Chanal & Kimble, 2010; Roberts, 2006), as will be discussed when considering the potential implications of these findings for design and practice.

In most cases seen in the nine groups, including users who focus on the organizational technologies *and* users who focus on groups and interaction, technology is important to the coherence of existing communities. The technology implemented by LibraryThing and Goodreads allows users to discuss and interact, organize and catalog, and engage in information behavior and activities; in essence, the full spectrum of features, activities, and abilities ascribed to a social digital library (see section 2.4.3). Activities to create organizational structure include features that could be classified as social annotations (Neuhold, Niederée, & Stewart, 2003): editing metadata, creating lists or shelves, rating books and writing reviews, and linking to other pages for other books, authors, or series. Linking to discussion pages and organizing group discussion boards do not fall under social annotation, but still create structure within the community environment; this is similar to the inclusion of such linking structure in the Ensemble digital library portal and DL 2.0 framework (Akbar et al., 2011; Brusilovsky et al., 2010). Both sets of activities require technology to play a role in turning LibraryThing and Goodreads from a box on the end of an Internet connection into *digital* libraries, *online* communities, and *virtual* book clubs (cf. Rehberg Sedo, 2003; Fister, 2005). The roles the two play, for users of the nine groups, as technological boundary objects in the structural coherence of social and information worlds are quite strong.

5.2.1.2. Values-based. A value-based role for LibraryThing and Goodreads is seen in those communities and contexts where users from the nine groups discuss or imply their

215

individual values of objects and discussion topics of interest. Such individual values cohere with those of others in some cases, but divergences are present and accepted. The role of LibraryThing in Goodreads here is in facilitating the often-"invisible work" (Star & Strauss, 1999) of value expression, translation, and coherence in those cases where users, perhaps without realizing it, have interests and opinions they want to and do share with others. Nevertheless, divergences and lack of coherence in some values may be an asset and themselves valued by members of a broader community, as in the virtual book clubs studied by Rehberg Sedo (2003).

Along with information values themselves, it is the process of translation and its potential to lead to coherence that is most important in a values-based role for LibraryThing and Goodreads within existing communities. In this context, the process of translation consists of negotiation and reconciliation of the meanings and understandings underlying the values and interests of individuals and the meanings and understandings they bring to the table from their existing social and information worlds. As a process, translation may lead to coherence of those values implicitly or explicitly. Translation can lead to better understanding of where divergences and disagreements exist, allowing maintenance of coherence over time without major conflict. LibraryThing and Goodreads serve an implicit and often key role in facilitating this translation process for users from the nine groups.

In the knowledge management literature, translation and coherence of values falls under the view of "common ground" (Davenport & Prusak, 2000), although many authors are vague with their terms and use culture and norms as near-synonyms for values (e.g. Wasko & Faraj, 2000). Shared values, conformity, and reciprocity are frequent motivators for knowledge sharing (Ardichvili, 2008). Bridging values and norms and translating knowledge between contexts helps move communities forward and encourage greater levels of knowledge sharing (Ardichvili, Page, & Wentling, 2003; Bechky, 2003). This leaves potential implications for how translation and bridging of values can lead to a stronger role for a digital library in communities, and greater information sharing and interaction in and between those communities, as translation moves towards coherence and possible convergence.

5.2.2. RQ2: Roles in Emergent Communities, Coherence, and Convergence

5.2.2.1. Structure-based. Social norms, normative information behavior, and sites for that behavior to take place in are important, key factors in the structural roles LibraryThing and Goodreads play in the emergent communities of users from the nine groups. Key members in the

LibraryThing groups, and key members in and moderators of the Goodreads groups, establish explicit social norms and rules as guides for the community and to govern the use, purpose, and normative information behavior of groups and their associated sites. Such a leadership role can encourage existing knowledge sharing and new knowledge creation (Ardichvili, 2008; Nonaka, 1994); leaders and others holding authoritative knowledge also play important roles in communities of practice (Brown & Duguid, 1998; Lave & Wenger, 1991), most social networks (the concept of "centrality"; Garton, Haythornthwaite, & Wellman, 1997), online patient support communities (Kazmer et al., 2014), and some virtual book clubs (the "question maestros" seen by Fister, 2005, p. 306; and the moderators in groups studied by Elsayed, 2010). A structural role is more common for Goodreads to take on because of greater technological facilitation through stronger moderator privileges and the additional organizational structure of message folders. Sites, in many cases, had already converged due to other phenomena; in those cases the role of LibraryThing or Goodreads for users of the nine groups is stronger than in cases where a site emerged later.

Implicit norms have a cultural impact on the community's social structure and on the implicitly normative information behaviors and activities it chooses to engage in. These become most evident when they conflict with explicit norms of other intersecting communities (such as in the Goodreads shelving controversy). The danger of having *too* much structure and of insular groupthink (see e.g. Tsikerdekis, 2013) can be seen in such conflicts, where the common identity of LibraryThing and Goodreads across the social and information worlds of users from the nine groups becomes of some question; in effect, some communities—being perceived as organizations by their users—risk being too unaware of other communities, other objects, and other interpretations of the digital libraries as boundary objects. When they introduced convergence, Star, Bowker, and Neumann (2003) warned that communities might "close off other possibilities of finding information ... because they are not part of the routine" (p. 248). Roberts (2006) warned of similar concerns over groupthink in how knowledge acquisition may be limited by the "predispositions" of communities of practice (p. 629). As she suggested in that environment, LibraryThing and Goodreads—and groups that are part of the two digital libraries—should consider the socio-cultural and organizational contexts they are part of and the boundaries that exist within and beyond those contexts, so that "other possibilities" (Star et al., 2003, p. 248) do not get ignored.

Nevertheless, in most of those instances where LibraryThing or Goodreads play a structural role for users from the nine groups, convergent communities are established and maintained as sites for information behavior and activities, with the digital libraries having much to do with facilitating and supporting these communities and the normative information behaviors and activities of users within them. They play a structural role in allowing the strongest communities, with the most structure, to emerge as organizations to further their activities, but with the risk of conflict should those organizations develop substantive differences in their norms, values, and information behavior.

In emergent communities, translation enters into a structural role. The processes of translation allow the existing convergence over the nature of the site, social norms, and technology use to be maintained, through clarification, negotiation, and reconciliation of the meanings and understandings behind the community's organizational and social structure. Similar processes were at play in the virtual book clubs studied by Rehberg Sedo (2003), Fister (2005), and Greene (2012). While translation is most often associated with existing information worlds—and was in the codebook constructed for this study—its part in maintaining convergence does not stray too far from the ideas present in knowledge management's view of common ground (Davenport & Prusak, 2000) or in views of distributed knowledge in online communities (Haythornthwaite, 2006; Kazmer et al., 2014). While many studies in knowledge management have focused on a new community created and studied almost right away, studies that examined pre-existing communities that had already converged (Chiu, Hsu, & Wang, 2006; Kimble & Hildreth, 2005; Wasko & Faraj, 2000) are indicative of the importance of common culture and vision, norms, social ties, and a sense of community to successful and continual knowledge sharing, and a continued role for the community as a structure and organization. The part played by translation in maintaining convergence in emergent structural communities and in bridging their structures of distributed knowledge (cf. Haythornthwaite, 2006) is indicative of its importance in how—at least among the nine groups sampled in this study—LibraryThing, Goodreads, and their users can avoid major conflict and maintain a strong structure of multiple social and information worlds.

While technology is not, alone, a strong factor in the roles LibraryThing and Goodreads play in the emergent communities of users from the nine groups, it is important in those cases where boundary spanners (Brown & Duguid, 1998; Leonard-Barton, 1995; Levina & Vaast,

2005) are active. By using the technology to link to other messages, threads, or groups, these individuals could encourage the coherence and convergence processes along. The two digital libraries provide the necessary technological framework to support such boundary spanning activities. These findings echo Pawlowski and Robey's (2004) study of IT professionals in a large company, where they found numerous boundary spanners based on the structural and technological conditions; they placed the IT systems serving as boundary objects in the latter group. Kimble, Grenier, and Goglio-Primard's (2010) study was indicative of the important role boundary spanners and boundary objects can play in technological convergence. Kazmer et al.'s (2014) study of an online patient support community included users creating "connections from thread to thread in order to facilitate the discovery of knowledge for the group" (p. 1330), leading to greater convergence around technology and shared practices. As with these studies, boundary spanners identified in this study from LibraryThing and Goodreads are shaped by and mutually shape the digital library and the groups they participate in (c.f. Giddens's structuration theory; Orlikowski & Robey, 1991) and facilitate structural convergence between technology and information behavior and activities. These boundary spanners, given their greater awareness of the existing boundaries and boundary objects at play in the sociotechnical system, are well-positioned for increasing the role that LibraryThing or Goodreads play, as boundary objects, in technological convergence for users from the nine groups.

5.2.2.2. Values-based. In values-based communities, convergence of those values tends to be an implicit process. As users from the nine groups discuss or imply their individual values, interests, and opinions, they react to and reflect on what others have shared and the commonalities they have. They may not always acknowledge that this happens—as seen in information value not being significant in the survey findings—but the content analysis and interviews indicate that it does as a form of "invisible work" (Star & Strauss, 1999). Values converge, but convergence is not complete; differences remain and users often realize that is the case (which may have led to their responses on the survey). Nevertheless, those differences themselves are valued, and communities form and converge that users feel part of and value for emotional, cultural, and informational reasons.

Besides the relations between shared values and common ground already mentioned, the work of Shilton, Koepfler, and Fleischmann (2013) has focused on the role played by values in the design of technologies and sociotechnical systems, and has potential implications and

219

application for further and deeper research into the role of values in the sociotechnical contexts of digital libraries as they serve as boundary objects. LibraryThing and Goodreads serve a moderate role, in implicit fashion, as boundary objects in the convergence processes around information values in the emergent communities of users from the nine groups. Interviewees' reflections illustrate the role is quite strong in some cases, and important for many—if not all—users and user communities.

   5.2.2.3. Social network-based. Certain elements of normative information behavior and activities lead to a social network-based role being played by LibraryThing and Goodreads for users from the nine groups. By engaging in common activities, "occupations," and "pursuits," users feel they can establish connections between each other and feel part of a community-as-social-world. Those connections become social ties and a common community culture through the coherence and convergence of continued activities and information behavior, information values in relation to that behavior, and sites for those activities and behaviors to take place in. Behavior that had been considered non-normative becomes accepted; topic divergences and derailment of threads are allowed because they further users' cultural, social, and emotional connections to each other. Discussion of everyday life and of users' everyday life information behavior (Savolainen, 1995) is normative for the same reasons. Such a network-based community is not as reliant on LibraryThing and Goodreads as a venue for its information behavior and activities, but the digital libraries still play a weaker role for users from the nine groups in allowing community members to connect and interact through normative activities and information behaviors. They serve as a standard meeting ground from which users can later branch out if they wanted, as occurred with Melissa and LibraryThing Group C and with the shifting of Sam and others from a public to a private LibraryThing group.

   This less space-focused perspective echoes Fister's (2005) description of a tight-knit virtual book club, and fits with Wellman's (1999) argument for a network-centric view of community. The emphasis on social ties echoes Marshall and Bly's (2004) argument for an emphasis on tie-strengthening collaboration, which has taken place in communities where LibraryThing and Goodreads plays a social network-based role. The importance of social and emotional connections in these communities is similar to its role in other online communities (Burnett & Buerkle, 2004; Wellman & Gulia, 1999), including health and patient support communities (Frost & Massagli, 2008; Gooden & Winefield, 2007; Kazmer et al., 2014; Worrall

& Oh, 2013). Chiu, Hsu, and Wang (2006) found stronger social ties to predict the quantity (but not quality) of knowledge sharing in an online Taiwanese IT community; quantity of contribution was not analyzed in this study. Social ties were part of a typology Amin and Roberts (2008) proposed to replace communities of practice for studies of learning and knowing in action and practice. They stressed the different contexts, environments, assemblages, ecologies, and spaces surrounding the activities of learning and knowing, a view not altogether incompatible with the framework for and approach taken to the present dissertation study. There is, in effect, a duality here: the complexity inherent in the communities facilitated by a social network-based role—consider Sam's difficulty in expressing the full nature of the sense of community he felt (see section 4.3.5.3)—sits alongside the "happy" (Lindsey) "family" (Rachelle) of "real friendship" (Melissa) and "real community" (Ann) that, from a certain point of view, requires little to no explanation.

Social types are a part of a social network-based role for LibraryThing and Goodreads among users of the nine groups. Although their importance is weaker than most of the other phenomena, in those cases where users invoke implicit or explicit social types they tend to be of outsiders and stronger ties. The latter is indicative of higher comfort levels, within a strong social network, with characterizing other members of the network: knowing someone well means one is more at ease with sharing that knowledge (as interpreted in individual or socially constructed context) with others. This finding is common sense, but there is little to no literature that explains how differences in comfort level affect willingness to type (as will be discussed further later). There is a weak, but still existent role for LibraryThing and Goodreads in the facilitation of tie formation and maintenance (cf. Marshall & Bly, 2004) among users from the nine groups. Typing of outsiders goes with the territory of LibraryThing and Goodreads being intended to play a role—be it coherent or convergent—for readers first, although Rachelle and others questioned whether that remained as true of Goodreads as in the past.

Boundary spanners (Brown & Duguid, 1998; Leonard-Barton, 1995; Levina & Vaast, 2005) build connections and ties between multiple communities and further encourage the coherence and convergence processes along. Among users from the nine groups, the two digital libraries provide the necessary environment to support such boundary spanning activities and shape the boundary spanners, who shape LibraryThing and Goodreads and the groups within the site right back by establishing connections between social and information worlds that had no

ties in common (c.f. Giddens's structuration theory; Orlikowski & Robey, 1991). Boundary spanners, through their awareness of where the boundaries are in the existing social networks and communities, are well-positioned for strengthening community convergence based on social ties. In doing so, they strengthen the roles of LibraryThing and Goodreads, as boundary objects, in the convergence and emergence of social network-based communities. Nevertheless, the activity of the boundary spanners themselves plays the largest role here; LibraryThing and Goodreads are facilitators, not initiators, and their role in this case is moderate.

5.3. Digital Library Design and Practice

This section of the discussion considers the relation of the findings reviewed above and in Chapter 4 to digital library design and practice, in both theoretical and common-sense terms. Relevant literature and potential implications of the findings in this light and in the context of the limitations of this study (see section 5.6) are included throughout.

5.3.1. Establishing a Community

The findings of this research imply establishing one or more communities around a social digital library is possible. Coherence and convergence—the coming together of a community around common characteristics and understanding—occurred in many cases seen in the content analysis and interviews, and the survey findings were indicative of LibraryThing and Goodreads playing strong roles in the emergence of shared communities among the nine groups sampled. There were cases of conflict seen, where communities were not maintained at the same level or did not see as much success in their establishment.

Findings and the research literature imply the first step should be to establish coherence, or to re-establish it if necessary. If conflict has occurred, the best way for a community and its users to recover from a bad experience is to establish community and organizational structure and share values. Perfect coherence should not be the goal; a partially negotiated and translated understanding between users of the norms and rules of the community and of what information is of common value can be enough for a community to become a place users want to interact (as in the virtual book clubs studied by Rehberg Sedo, 2003). Key in this are the translation processes—negotiating and reconciling the meanings and understandings users have—that allow coherence to begin to be established. While often lacking in visibility (Star & Strauss, 1999), digital libraries should consider highlighting translation processes and resources for users that can help them express, negotiate, and reconcile the meanings and understandings behind the

222

information and knowledge they share. Digital libraries should further encourage leaders of communities within the digital library to stress these processes and resources to other users, leading to more frequent distributed knowledge creation and sharing (Ardichvili, 2008; Haythornthwaite, 2006; Kazmer et al., 2014).

Along these lines, Preece has developed a list of nine questions that users may ask as part of becoming a member or maintaining their membership in a community, with implications for the community and its social context (or "sociability") and usability (Preece & Maloney-Krichmar, 2003, p. 609). Many of these questions are those users should have answered to establish coherence of common social norms and rules, valuing of information, and information behavior and activities. Doing so will allow meanings and understandings to be reconciled between different users and user communities. Paraphrased, some of these include:

- What is the purpose of the community?
- How does membership work?
- What rules exist?
- How can and should I interact with other members?
- How can I get information I desire or value?
- Why should I stay here over time?

For many of these suggestions, Preece suggested providing structure for supporting translation and coherence: stating the purpose in clear terms, explaining membership and rules, developing help pages and a list of frequently asked questions that explain how the community works, providing direct help when and where needed, facilitating the information seeking and searching process, and encouraging leaders to stimulate continued interaction. Some of these were seen in the present study in one group, LibraryThing Group C, who had created pages and threads that introduced the group, its rules, and its members. All indications were having these resources present for those new to the community or needing a refresher served to help facilitate translation, coherence, and convergence.

Leaders within the community—moderators, boundary spanners, and others with high visibility—should engage in the processes that create these resources; wiki technology or concepts have potential for facilitating this (Frumkin, 2005; Krowne, 2003). Their coherence to the community as it changes should be maintained, and further translation of meanings and understandings for existing and new members should take place when necessary. This shares

existing knowledge and facilitates further knowledge sharing and creation (Ardichvili, 2008; Haythornthwaite, 2006; Nonaka, 1994); encourages the development of common ground (Davenport & Prusak, 2000); and enhances the role of the digital library, as a boundary object, as a site for information behavior and activities and as technology that provides the structure for carrying out those activities (cf. Pawlowski & Robey, 2004).

Another important element of establishing community around a digital library is that both coherence of existing user communities and convergence of one or more emergent communities can be necessary. As seen in conflicts due to groupthink (see e.g. Tsikerdekis, 2013), sometimes a community can "close off other possibilities" that are outside its borders. A digital library with such communities will not have as strong a role as a boundary object and may see conflicts like those over shelves in Goodreads or the value of an author's work, or find that users visit other sites that they find more coherent with their other communities. To serve a successful role as a boundary object, a digital library must adapt to the "local needs" (Star, 1989, p. 46) of many communities simultaneously while maintaining a common identity across them; it must reconcile and cohere meanings and understandings across these communities and worlds to allow users to "work together," collaborate, and interact without major conflict (Star & Griesemer, 1989, pp. 388–389). At least a moderate degree of coherence between the communities that use a digital library—be they those emerging from its use or those already existing beyond it—will support this.

To facilitate this coherence, digital library designers and practitioners should ensure that clear expressions of site-wide social norms and rules, understanding of what types of information are valued, and expectations for normative information behavior and activities are made, using many of the same suggestions made by Preece discussed above. At the same time, they should be willing to engage in a translation and negotiation process with users and the communities they are part of, an interactive discussion of the meanings and understandings behind these expressions. This will help maintain coherence with the social norms and rules, information needs and values, and normative information behavior users expect, based on their pre-existing communities and experiences. Those who span the boundaries between multiple communities— as in the experiences of Miriam and Lindsey among the interviewees—can help with this process. More negotiation—with both readers and authors—and a clearer statement of values

and expectations may have alleviated the conflict Goodreads and its communities faced over its policies on typing authors via shelf names, for example.

When translation leads to coherence and coherence to convergence, social ties—connections between multiple users based on one or more relationships between them, often including an informational component (see e.g. Garton et al., 1997)—begin to be established. Along with supporting and facilitating structure and value-based roles, digital libraries should facilitate users' abilities to form and maintain these social ties, so they can serve as strong boundary objects in a social network-based role and support deliberate and serendipitous information and knowledge sharing that furthers true collaboration (Gunawardena, Weber, & Agosto, 2010; Marshall & Bly, 2004). Ties facilitate and support everyday life information behavior (Savolainen, 1995), which may start out as non-normative but *becomes* normative as users look to share and converge their values, norms, and culture and form tight-knit communities along the lines of the virtual book club Fister (2005) described.

User profiles are a good way to help facilitate ties; as seen among the users from the nine groups in this study, this allows them to learn about and get to know each other from looking at the information they have posted about themselves and the identity they choose to present. While privacy concerns must be considered, encouraging users to fill out most of the fields in their profiles will give them greater control over how their identity is perceived by others. The usefulness of profiles is limited, however; not all users will want to portray or disclose the same identity to everyone using a given digital library or part of a given online community. The specific context is important to behavior, activities, norms, interests, and other facets of identity construction, as literature on context collapse and online identity indicates (see e.g. boyd, 2014; Vitak, 2012). User profiles can only go so far to facilitate the sharing of identity—as individually and socially constructed in varied contexts—and the formation of ties. The ideas present in the Fringe prototype drawing on folksonomies, the semantic web, and social constructionism (Farrell, Lau, & Nusser, 2009); the Ensemble educational digital library portal (Brusilovsky et al., 2010); the CallimachusDL prototype (García-Crespo et al., 2011); and in social media and social networking services past and present (including Pinterest; Zarro & Hall, 2012) may help facilitate users socially identifying and typing themselves and others, although their willingness to do so in public venues is of some question (as discussed further below) and the issues surrounding context collapse should be accounted for. Providing separate sites and spaces for

off-topic discussion allows for the building of social ties and networks, but ensures users who are only interested in on-topic, normative discussions and do not share common values around off-topic information can skip over most such interactions, if they wish. Some tie formation will happen anyway, but if a digital library can provide the technological resources, platform design, and appropriate services to facilitate users' forming and maintaining social ties, it will serve a stronger role as a boundary object and reduce the potential for major conflicts within and between the communities it serves.

5.3.2. Right Features, Right Audience

Once a social digital library as boundary object has developed features that facilitate its potential structure-, values-, and social network-based roles, it should not push them all out there, without thought, for all its users to see, use, and appreciate. Other findings from the users of the nine groups that were part of this study imply that the digital library should target and promote the *right* features to the *right* audience. Not all users will be interested in using every feature, as was seen in the interviews. Taneesha's narrow focus was on using Goodreads "to find new books, and to discuss books"; Jennifer found another site (BookCrossing) more to her liking for interaction than LibraryThing, using the latter for reviewing; Kevin interacted quite a lot in Group I but chose to post his writing elsewhere despite the opportunity to post it in the Goodreads group he was part of. Digital library designers and practitioners may think that these or other users should take better advantage of the features provided by a digital library to facilitate and support community and the processes of translation, coherence, and convergence, but we cannot force technology *or* community down the throats of our users, no matter if we think we know better than they do what features they should use.

Focusing too much on the technology (Brown & Duguid, 2002), or not having a good grasp of the community aspects (Chanal & Kimble, 2010; Roberts, 2006), will lead to problems down the road with adoption and use—as occurred with Marchionini's sharium model (Marchionini, Plaisant, & Komlodi, 2003)—or with maintaining funding for research or as an organization—as occurred with the Alexander project (Kolbitsch & Maurer, 2006a, 2006b; Kolbitsch, Safran, & Maurer, 2007). Technological determinism is not the way to go, but neither is social or community determinism; sociotechnical systems and infrastructures, and the social informatics approach, require consideration of both technological features and community context in combination (Edwards, Bowker, Jackson, & Williams, 2009; Kling, 1999;

226

Rosenbaum, 2014). This is no less true of digital libraries, as Lynch (2005); Tuominen, Talja, and Savolainen (2003); and Van House (2003) have helped make clear in the past (see also section 2.4).

Those designing and developing digital libraries should keep technology and community in mind during the design process, and not push out features because they might support a small part of the audience. Targeting the appropriate segment of the audience allows Ann to know about profile features that she finds useful without Taneesha having to know the features are there. It allows Kevin to choose to post his writing elsewhere while allowing other members of that group to engage in collaborative critique of each others' work. This does not mean that easing users in to a feature that they might have some interest in is never appropriate—for example, Jennifer held a preference for BookCrossing's forums over LibraryThing's, but left the door open for more use of the latter if usability improved—but such features must cater to the audience. Technological features, usability, and sociability (Preece & Maloney-Krichmar, 2003) are all necessary components.

5.3.3. Cross the Streams

As discussed earlier in this chapter, among users from the nine groups in this study boundary spanners—those who crossed the boundaries between different communities—made more frequent use of the technology provided by LibraryThing and Goodreads to support the emergence of new communities. Their cognizance of the boundaries of the groups and communities that exist within and around the two sites, and of the two digital libraries as a whole, is indicative of the importance of spanning boundaries for facilitating and supporting coherence and convergence and for strengthening communities of all shapes and sizes. This is true for users, but it is also true for digital libraries themselves and for digital library designers and practitioners. Closing off possibilities (Star et al., 2003) for crossing the streams means forgetting the broader contexts; as Roberts (2006) suggested for knowledge management, the socio-cultural and organizational contexts that surround organizations and communities should be considered.

An awareness of boundaries and a willingness to span them in design and in practice is a necessary quality for those working with digital libraries. Computer scientists should talk to information scientists, and both should talk with sociologists and other social science and humanities scholars. Researchers, theorists, and practitioners should not stay in their insular

worlds, but talk about how they can work together. Those interested in digital libraries should talk with others with similar and different interests, be they in the same discipline or not. By being cognizant of and willing to span the boundaries of the multiple communities that they find themselves in, digital library designers and practitioners will have a greater understanding of how they should do what they do.

Returning to users, the same is no less true: users of social digital libraries—or who are part of any community—should be willing to stretch their legs a little and see what lies beyond the boundaries of any one group or community setting. Encouraging this through design and practice is not easy, but there are some potential approaches. The activities of the boundary spanners identified among users of the nine groups in this dissertation study show some of these possibilities. Facilitating and encouraging linking between parts of communities and parts of the digital library—in the case of LibraryThing and Goodreads, this includes messages, threads, groups, book pages, author pages, and series pages—allows relevant information that crosses boundaries to be shared, without those boundaries becoming barriers to such sharing. Technology similar to that proposed in the DL 2.0 framework of Akbar et al. (2011) that brings in and interconnects related content automatically, generating links or displaying information from beyond the current context that may be useful and valued, could encourage boundary spanning, coherence, and convergence. (Per Miriam, a new feature on LibraryThing is the introduction of links to active discussions on book pages, which is a great step in this direction.) Users should have the option to turn off anything automatic, since they may not be interested in these features (see section 5.3.2 above). The issues of identity construction and impression management surrounding context collapse, especially when boundaries are crossed (boyd, 2014), mean that complete convergence and the collapse of all boundaries should not be expected or forced. Multiple findings from this study show that this is not necessary for a digital library to have a strong role in a strong, tight-knit community, but some level of boundary spanning can be productive for users and user communities.

Boundary spanning and crossing can enhance the quality of the information behavior and activities that take place. This is true in scientific collaboration; successful juggling of, bridging between, and adapting to multiple communities and lifecycles increases the likelihood of a scientific team continuing to conduct research and building a long-term research agenda, as they converge their norms, values, behaviors, and other characteristics (Burnett et al., 2014; Worrall

et al., 2012). Such common ground then encourages higher quality and quantity in information and knowledge sharing, as seen in online communities (Chiu et al., 2006). Encouraging interaction between administrators, moderators, boundary spanners, and other active members in social digital libraries should produce similar results. Venues for discussion of community structure across the boundaries of communities—as social and information worlds—could help encourage such discussion and the sharing of information and knowledge between key stakeholders. Features like these, if built into the design of a social digital library and its ongoing practice, should facilitate and encourage boundary spanning activities, leading to increased coherence and convergence and a stronger role for the digital library, as a boundary object, in the existing and emergent communities it serves.

5.4. Research

This section considers the relation of the findings discussed above and in Chapter 4 to research in digital libraries, social informatics, and information behavior. Relevant literature and potential implications of the findings for further research are included throughout.

5.4.1. Digital Libraries in Context

These findings—despite limitations (see section 5.6)—and the context of the literature reviewed in Chapter 2 stress the need to consider the full context of social digital libraries as they are used by individuals, groups, communities, and organizations. Not all individual users or groupings of users can or should be treated as one unit (Dervin, 1977); while user communities must be studied and the broader implications considered, there are other contextual factors that must be taken into account. This study included other demographic and background variables and characteristics as part of its survey instrument, and asked individual users in interviews about their practices and preferences as they used LibraryThing and Goodreads. Contextual factors of the users from the nine groups such as age; educational level; frequency of use of the Internet, of LibraryThing or Goodreads, and of the groups features; and use of other social networking sites and services impacted on translation, coherence, and convergence; on the social norms, social types, information value, information behavior and activities, and organizations of the users and their communities; and on uses of the digital libraries as sites for information behavior and activities and as technologies supporting such activities. Individual differences in these factors affected how users chose to participate in groups and communities as part of their

use of LibraryThing and Goodreads, with the roles played by the two sites varying from community to community and from user to user.

This variance is evidence that these findings may not transfer beyond users of the five LibraryThing and four Goodreads groups to other populations and environments without subtle, context-sensitive changes, although reasonable transferability of the content analysis and interview findings is believed to exist to LibraryThing and Goodreads as a whole. Contextual factors should be considered in further research—both to confirm the findings and conclusions made here and to build on them—that takes place on LibraryThing, Goodreads, and other social digital libraries as used within and across communities. A digital library does not exist in a vacuum, nor does its use take place solely in individual, technological, or community contexts; the approach of social informatics and sociotechnical research should be taken, considering all of the contexts surrounding the roles of digital libraries within and across communities (Edwards et al., 2009; Kling, 1999; Rosenbaum, 2014). Deeper dives that explore a few facets of this context—while remaining aware of the others—are possible, as are applications of a similar approach and set of background factors to different digital libraries. Such research will help confirm if the interactions of demographic and background variables found here are transferrable to other sets of users and communities and within and around other digital libraries—including those that have less overt social features—or are unique to the particulars of this study and to users from the nine groups studied.

5.4.2. Social Informatics and Information Behavior

Context enters into how the findings and conclusions of this study, of two social digital libraries, fit alongside other research streams. This research has potential implications for digital library design and practice (see section 5.3 above), but it also has further potential implications for research in social informatics and information behavior. Some of these relating to information values and boundaries are discussed in sections that follow this one. With reference to context, there appears to be great potential to build on this study by comparing across platforms, communities, and user populations with regard to the phenomena seen here. Translation, coherence, and convergence do not happen in digital libraries alone; all information and communication technologies (ICTs) should play roles in communities, and studies that apply the concepts and theories of boundary objects, social worlds, and information worlds—or the social informatics, social constructionist, and contextual approach taken here—to other ICTs as

230

used in sociotechnical context can add to the conclusions and potential implications of this current study.

For example, let us consider information behavior and activities, a phenomenon of interest in this dissertation. The findings of this study apply to the specific context that was studied here—five LibraryThing groups and four Goodreads groups—but have potential transferability to other settings and environments. These include digital libraries, of course—with emphasis on those that can be considered social digital libraries—but may include other online communities, social media services, or contexts where social information behavior takes place. Such transferability must be confirmed by conducting further research and reviewing the related literature. This is not the first study of information behavior, or of activities, that has been completed; Case (2012) and Clarke and Star (2008) are evidence of that. This is not the first study of information behavior or activities in an online community (the review by Fisher & Julien, 2009, provides many examples); in a digital library (the review by Bearman, 2007, discusses many studies of individual and collective information behaviors and use); or from the view of social informatics (which information behavior research complements; Sawyer & Eschenfelder, 2002), social constructionism (see Case, 2012, pp. 190–191), or context (see the review by Courtright, 2008). Along with comparisons within the literature—which this study adds to—there is scope and need for further research that compares platforms and communities within the same study, theoretical framework, and/or overall approach.

Such research might maintain a focus on a given platform, such as LibraryThing or Goodreads, and study the information behavior and activities of the many different communities that use them. Research could shift to studying a broader range of platforms, such as multiple digital libraries, a range of virtual book clubs, other online communities, and other social media sites. For example, examining, comparing, and contrasting information behavior and activities and the processes of coherence and convergence across Facebook, Pinterest, LibraryThing, and Goodreads could provide much insight into the similarities of and differences between how users communicate and interact on each of those sites; their use of the technical structure provided for organization, curation, and interaction; and the social phenomena of forming social ties, maintaining social ties within and across communities, and boundary spanning. Research could move further beyond this, to considering other facets of information behavior that involve social or community contexts (such as mobile information sharing as suggested by Worrall, 2013a).

231

These kinds of studies would use many of the same theories and approaches as this dissertation study, but move beyond a focus in online communities or digital libraries and allow for comparison of phenomena of interest in the areas of social informatics and information behavior with the findings and conclusions discussed here.

The next two sections consider two areas of interest to social informatics and information behavior researchers for which the current findings have particular overlap and potential implications: (a) information values and (b) boundaries.

5.4.3. Information Values

The strongest factor found to influence the roles that LibraryThing and Goodreads played in the existing and emergent communities of users from the nine groups was information value. Jaeger and Burnett (2010, p. 35) defined it as "a shared sense of a relative scale of the importance of information, of whether particular kinds of information are worth attention or not." Such values could include, but were not limited to "emotional, spiritual, cultural, political, or economic," and might be explicit or implicit (p. 35). Values are referenced in literature on values in sociotechnical systems design, online communities, and common ground in knowledge management. This literature and the potential implications of this study in these contexts are discussed below.

5.4.3.1. Values in sociotechnical systems design. As mentioned earlier in this chapter, Shilton, Koepfler, and Fleischmann (2013) have explored the roles played by values in the design of technologies and sociotechnical systems, taken from the approach of social informatics and other research traditions with a spin towards social welfare and social justice (see Fleischmann, 2014, for a broader review of this research area). Shilton (2010) examined mobile sensing from a participatory perspective, focusing on how values are built into such systems. She found design practices that encouraged integrating social values as integral parts of the design. Values are articulated by design teams through the process of system development, becoming personal and an important factor as design becomes iterative in response to testing. Designs were more successful due to the influence of values; external values, such as feedback from users, did not play as successful a role. While most of the users from the five LibraryThing and four Goodreads groups in this dissertation study did not engage in "design" as such, in the cases where they collaborated together—often led by a moderator or boundary spanner—coherent or convergent values were present and helped activities take place without major issues. Conflicts

were caused by lack of agreement over values (such as Betty's referencing of such disagreement over the value of Isaac Asimov's writing) or a lack of translation; the articulation processes mentioned by Shilton could be seen as a parallel to translation.

Fleischmann (2007b) has suggested digital libraries should have embedded social values, and applied a framework of "boundary objects with agency" to digital libraries, drawing on social worlds, boundary objects, and nonhuman agency (the latter as used in actor-network theory; pp. 417-418). This framework has similarities to that used in this study, but does not include the same range of ways of looking at coherence and convergence and instead focuses on information and social values (as is, of course, necessary for his value-sensitive view), with the addition of the concept of nonhuman agency. Fleischmann argued that this framework "can be a useful concept for understanding the connection between values and other forms of IT, including digital libraries" (p. 420). Van House's (2003) identification of trust and credibility as values that affected coherence and convergence in another digital library is seen as a complementary finding by Fleischmann.

Shilton, Koepfler, and Fleischmann (2013) introduced another framework for studying "where and how values are negotiated and enacted by people, institutions, and technology" in sociotechnical systems (p. 259), drawing from the "value-sensitive design" and "values in design" research streams (p. 260). The framework allows for classification of the source and attributes of values identified through research and analysis. They applied the framework to three case studies—one from each author—where similar values to those emerging from this dissertation can be seen. Their framework overlapped information values with social values, which makes sense given their interest but limits the potential for direct comparisons with research based on Burnett and Jaeger's (2008; Jaeger & Burnett, 2010) concept of information value as defined in the theory of information worlds, or the earlier concept of worldview used in Chatman's theory of normative behavior (Burnett, Besant, & Chatman, 2001; Pendleton & Chatman, 1998). Koepfler's case study (Koepfler & Fleischmann, 2011, 2012) is most comparable of the three, given that she studied an online social media community (Twitter users who had or were experiencing homelessness) that engaged in information sharing. Nevertheless, some values identified by Koepfler and Fleischmann fell beyond the scope of information value, especially if the latter is interpreted on the narrower side. Their findings stress the importance of

233

context in determining values and the frequency with which values are expressed, true in this dissertation study.

All told, these frameworks hold much potential for deeper dives into the information value phenomenon and its impact on the roles played by LibraryThing, Goodreads, and other digital libraries as boundary objects in their users' existing and emergent communities, both within the nine groups studied here and in other social and information worlds. If the framework included here, including the theory of information worlds, was used with that of Shilton et al. or Fleischmann, a line—likely fuzzy—would have to be drawn between all values and information values. With or without these frameworks, further research into the nature and scope of information values in and their impact on the roles played by digital libraries and other sociotechnical systems would extend the findings of this current study and of related literature in the values in design and value-sensitive design communities. The values and design literature has strong implications for the future of social informatics research, including the issue of scale (Fleischmann, 2014). The multi-leveled theoretical framework used in this dissertation study, or parts of it, might be useful in furthering these implications from another perspective.

5.4.3.2. Online communities. Of the literature reviewed in Chapter 2, Kraut, Wang, Butler, Joyce, and Burke (2008) focused their view of virtual community on "common or complimentary interests" and advice; these are not direct substitutes for the concept of values, but have a strong relationship. What one is interested in is assumed to be of value, and asking for advice implies that one will value an informative response. Whittaker, Isaacs, and O'Day (1997) reviewed a CSCW conference workshop where a "prototypical" community—online or face-to-face—was considered to include "members [that] have some shared goal, interest, need, or activity that provides the primary reason for belonging to the community" (p. 29). Here, interests are similar to needs as with Kraut et al., while needs could be considered similar to values, in the sense of something one "needs" implies a high degree of value. A goal could be considered related, since having an end result in mind implies that result is valued.

While a thorough review of all studies that studied value in online communities is a bit beyond scope, studies with a high degree of comparability in the community studied and in the research methods and approach taken are worth consideration. Seraj (2012) is an example that, while from the marketing field, has such a high degree of comparability; she employed qualitative analysis of messages and interviews with users to understand how value is created in

the Airliners.net online community, which has quite a few similarities to LibraryThing and Goodreads. Seraj used a definition of value from Zeithami (1988, as cited in Seraj, 2012, p. 209) as "the utility of a product based on perceptions of what is received and what is given." She found intellectual value ("co-creation and content quality"), social value ("platform interactivity through social ties"), and cultural value ("self-governed community culture") to be created in the Airliners.net community (p. 213), and related these to different social roles she identified (e.g. an "educator" held both intellectual and social value, while an "innovator" held only social value; p. 219).

While the view of value in this and other online / virtual communities literature is not identical to that of information value—and the latter, of course, has a narrower focus on valuing of information—comparisons can still be drawn and potential implications considered. Kraut et al., Whittaker et al., and Seraj all believe value (or its close cognates) is an important part of a community, which matches with its emergence as an important factor in this study. That coherence and convergence of information values were not always visible to users of the five LibraryThing and four Goodreads groups is somewhat similar to other concepts (interest, goal, need, activity) that might be raised first; in this study information behavior and activities were significant among users who completed the survey, and many users mentioned interests in the messages and interviews. While Seraj and I differed in our analysis of social types and roles, the prevalence of social value in the Airliners.net community compares favorably with the social network-based role played by LibraryThing and Goodreads in this study. Both studies illustrate a socially co-constructed community (or more than one, in this dissertation) where users shape and are mutually shaped by the social organization (c.f. Giddens's structuration theory; Orlikowski & Robey, 1991); such a view of co-construction is also present in Rehberg Sedo's (2011a) study of virtual book clubs. Seraj calls for longitudinal studies of communities at different stages in their development, which would be a natural progression for studies of information value. Such a longitudinal view would facilitate further exploration of the implications of users' values and communities mutually shaping each other over time, and consideration of the relationships between values and other characteristics of social and information worlds (e.g. social types) and of online communities (e.g. goals, needs).

5.4.3.3. Common ground. In knowledge management, the idea of culture, norms, interests, and values being shared or similar across a community is called common ground

(Davenport & Prusak, 2000). Different authors drawing on this perspective have used different combinations of those elements; some focused on culture and norms (e.g. Wasko & Faraj, 2000) as near synonyms for values, while others were more direct in considering interests and values (e.g. Ardichvili et al., 2003), and still others emphasized the translation of these (Olson & Olson, 2000). Shared values, conformity, and reciprocity are common motivators for knowledge sharing (Ardichvili, 2008); users are more likely to share what they know with others, and help create and share distributed knowledge (Haythornthwaite, 2006), if they have a shared sense of what information is important and of value. In this study, convergence of values did seem to lead to users from the nine groups sharing more information with others via LibraryThing and Goodreads, as boundary objects, but there were differences in value indicating moderate levels of convergence; these did not discourage such sharing. The knowledge management literature does not—in most cases—distinguish between coherence and convergence, but it is likely that the levels of convergence present here, despite differences, are sufficient to be considered shared values for the purposes of establishing common ground.

The bridging of values and norms by translating knowledge between contexts leads to greater levels of knowledge sharing, based on the knowledge management literature (Ardichvili et al., 2003; Bechky, 2003). In this study, translation helped users from the nine groups address information needs, explain circumstances that could reduce coherence or convergence, and get to know other members of the community. The latter two cases include elements of value. Explaining of circumstances involves bridging the already cohered or converged norms with potential disruptions to them. In the cases where this was observed or discussed, the translation process was successful and the community did not end up in conflict; it may be that the degree of knowledge sharing stayed the same, but the finding is similar to those of Ardichvili et al. (2003) and Bechky (2003). Getting to know other members is a process of forming and maintaining social ties within a community or across multiple communities; in a way, the "happy" (Lindsey) "family" (Rachelle) of "real friendship" (Melissa) and "real community" (Ann) sensed by some interviewees, resulting from this process, is similar to common ground, if less rooted in values than other findings. The addressing of information needs is less related to the idea of common values, although addressing someone else's need is easier if one shares at least some common values with them. Translation and boundary spanning activities did seem to encourage more

interaction, information behavior and activities, and knowledge sharing, so in most cases the findings from the knowledge management literature and from this study mesh.

Olson and Olson (2000) were coming from the computer-supported cooperative work (CSCW) perspective, but borrowed the idea of common ground and considered the relative difficulty of establishing it, through translation, when not collocated (i.e. speaking face-to-face). Most of their research included an audio or video link, which is missing for users of LibraryThing and Goodreads unless they use an external site and technology. Olson and Olson mention the importance of having a sense of awareness of where the other people in an interaction are coming from, their example being having had a difficult, stressful meeting. In the present study, this speaks to the high value some users from the nine groups placed on sharing and reading information about the everyday lives of community members and to the social network-based role played by LibraryThing and Goodreads in those cases. Those who have already established sufficient common ground, Olson and Olson reported, can communicate with success over almost any media; in this study, those who have met face-to-face did seem to have converged that much more—including their information values—although this was not a big enough sample to prove true correlation, to say nothing of causality. Olson and Olson's work comes from the perspective of media richness theory (Daft & Lengel, 1986), which has faced its share of critiques in the literature; other contextual factors can be more important in whether a particular medium can facilitate successful interaction and collaboration (see Lee, 1994). Facilitating collocation or so-called "richer" communication (e.g. video) for LibraryThing and Goodreads members might lead, for a few members, to easier translation and negotiation between users over the meanings and understandings they bring to their discussions and to the processes of information and knowledge sharing. It may lead to greater coherence and convergence of shared values and other phenomena, given sufficient time and frequency of interaction. However, this is not a practical recommendation for most users, and other contextual factors—as discussed earlier in this subsection—could make greater contributions to the formation of common ground. For digital libraries and other ICTs that serve those who can be collocated or communicate through video, the findings of Olson and Olson (2000) and the current study indicate it may help in selected (but not all or even most) contexts with translation and negotiation processes that lead to coherence and eventual convergence, and strengthen the role the digital library or ICT has as a boundary object.

Taken together, the findings from this study and literature on common ground imply shared values, and translation of said values, are important in cohering and converging communities around ICTs intended for the sharing of information and knowledge. The knowledge management literature does not make clear distinctions, in most cases, between the different phenomena that enter into views of common ground, nor distinguish—as black-and-white or on a continuum—between coherence and convergence. Whether further research on values, information and knowledge sharing, and community convergence is approached from the knowledge management perspective, the information science and social informatics perspective, or another perspective, it should be sure to consider various degrees and levels of information, knowledge, and value sharing.

5.4.4. Boundaries

The roles played by LibraryThing and Goodreads, as boundary objects, were the main focus of this study, but boundary spanning individuals and activities were identified in the process. The literature on boundary objects and boundary spanning is deep, and further development and use of boundary object theory and the concept of boundary spanners is proceeding and sometimes overlapping (see e.g. Bechky, 2003; Burnett, Subramaniam, & Gibson, 2009; Carlile, 2002, 2004; Kimble et al., 2010; Levina & Vaast, 2005; Swan, Bresnen, Newell, & Robertson, 2007; Van House, 2003). The current study fits better with the boundary objects literature, given its focus, but also has potential implications in boundary spanning.

Hara and Fichman (2014) reviewed the recent literature on boundaries, boundary objects, and boundary spanning, with an eye to the types of boundaries found. The emphasis in their review is on knowledge sharing, but much of the literature has potential application beyond that field (as seen elsewhere in this chapter and dissertation). The frameworks available for classifying boundaries are useful, but Hara and Fichman warned they are somewhat limited due to their development for use in organizational contexts, not in online communities or other environments where the role of organizations is low. In most cases this is true for the groups and threads of users from the nine groups in the current study, although LibraryThing and Goodreads sometimes served as organizations (but not in quite the same sense as in knowledge management literature).

The boundaries seen in this study, based on the phenomena of interest, can be analyzed using Hara and Fichman's synthesized framework (pp. 96, 99):

238

- *Physical*: Although no true physical boundaries were present in this study, the phenomenon of sites serves as a variation on physical boundaries, and Wright (2009, as cited in Hara & Fichman, 2014, p. 99) considered this category as "structural" instead, which describes the idea of a site. The more permanent (and "structural") organizations could be construed to fit here , although sometimes may go into the *political* category. Technologies fit best into this category; again, they may be seen as the most structural elements of the sociotechnical system.
- *Cognitive*: These boundaries occur in the context of information value, where users have different views and opinions that, at their base, are based on thought and consideration (albeit in socially constructed context). The translation of understanding and meaning and the work of boundary spanners involve the crossing of cognitive boundaries.
- *Social*: These boundaries occur in the context of social norms and normative information behavior and activities, as the potential coherence and convergence of a community culture takes place. Informal organizations fit here, as they may not have reached the level of formality required to be considered *physical*. Sites for information behavior and activities may fall here if there is good convergence taking place. Information values may fall here if they are far along in the social construction process and the boundary is with another community instead of between a few people.
- *Political*: Serious conflicts over information value and social norms end up falling under this category, which Hara and Fichman stated can sometimes be considered a sub-category of social boundaries. Formal organizations may end up here in the case of conflict.

Hara and Fichman's (2014) framework does not characterize types of boundary *objects* or the *roles* those boundary objects can play. The roles seen in this study—structure-, values-, and social network-based—do not fit well into their framework, but neither should they be expected to. Hara and Fichman intend "to investigate further development of boundary types in online communities" (p. 100), and further research is necessary in this vein. Such research would be complemented by further research expanding on Star's (2010) call to catalog the types of boundary objects and to categorize the roles those types of boundary objects may play in

interfacing with communities, as part of a broader research agenda into information from a boundary-aware viewpoint.

Awareness of a boundary-sensitive view of information, and of social and community theories of information, can help further research in many areas within library and information science. Crossing the streams does more than defeat supernatural marshmallow men; it ensures design, practice, and research do not become insular. Digital library researchers and practitioners should talk to those conducting social informatics, online community, and information behavior research (as suggested in section 5.3.3), and researchers in the latter three areas should be talking back to digital library people. Mutual familiarity with the lessons that can be learned from each set of research literature, combined with bridging and spanning of boundaries, will help connect what are sometimes disparate research literatures together. Researchers must juggle, bridge, and adapt to multiple communities, as with collaborative scientific research teams (Burnett et al., 2014; Worrall et al., 2012), to encourage successful long-term research on boundaries.

It helps that a boundary-sensitive view already crosses many of the boundaries that are present, and social informatics and information behavior researchers should consider the perspective offered by boundary object theory and the broader literature on boundaries as they conduct research.[3] Information is shared with and placed within new contexts and environments (Courtright, 2008); consideration of the boundaries between these contexts, how individuals can span those boundaries, the potential overlapping or nesting of communities as contexts, and the roles of boundary objects in translating, cohering, and converging these environments can lead to thorough and insightful study of information, information behavior, and related phenomena. Many theories and framings to ground such studies could fit within a boundary-sensitive view, including the following present as elements in this study (and explained in detail in Chapter 2):

- Strauss's social worlds perspective (Clarke & Star, 2008; Strauss, 1978)
- Burnett and Jaeger's (2008; Jaeger & Burnett, 2010) theory of information worlds
- Star's boundary object theory (Star et al., 2003; Star & Griesemer, 1989; Star, 2010)
- Gatekeepers and boundary spanners (Leonard-Barton, 1995; Levina & Vaast, 2005)

Additional theories and framings could be adapted within a boundary-sensitive view of information and information behavior:

---

[3] The argument made in this section is similar to one I previously presented in Worrall (2013a).

- Fisher's information grounds (Fisher, Durrance, & Hinton, 2004; Pettigrew, 1999), with emphasis on recent research on virtual information grounds (Counts & Fisher, 2010) and integration of information grounds alongside other theories that inform information behavior and social informatics research (Meyers, Fisher, & Marcoux, 2009). The advantage of information grounds is its high compatibility with many of the other theories and framings listed here.

- Savolanien's (1995) everyday life information seeking model and approach, given its overall influence in considering information behavior in many everyday contexts, its inclusion of social contexts and factors, and its potential ties to social constructionism.

- Social network analysis (SNA) and the social network perspective (Garton et al., 1997; Wellman, 1999); while these limit community to a view through the social network lens, they are flexible enough to allow for study of a range of information phenomena, with emphasis on information sharing and exchange. SNA allows for the detection and visualization of communities and boundaries.

- Actor-network theory (ANT) (Latour, 2005); boundary object theory borrowed and adapted concepts—including translation—from prototypical versions of ANT. While a bit difficult to wrap one's head around, its specific inclusion of nonhumans as actors and appropriateness for studying complex contexts could lead it to be useful for boundary-aware studies.

These framings and theories can be used one at a time, when a smaller study is necessary or a lot of data can be collected and needs quick analysis. A synthesis of more than one of them could lead to insightful findings, such as was done in this dissertation. Either case should, if a boundary-sensitive view is taken, lead to greater insights and implications for studies of information, information behavior, and communities and a stronger research agenda for the social informatics and information behavior fields as a whole.

5.4.5. Willingness to Type

As raised in section 5.1.2.2, the comfort levels of users from the nine groups in typing others varied. Socially, in the public messages seen in the content analysis, most users were less willing to apply social types to others beyond using nicknames and initials than might have been expected. The survey results further implied users were unwilling to own up to explicitly typing

others or that it was a factor in their use of LibraryThing or Goodreads. The interviews included more typing, with interviewees more willing to type other users who were strong ties and outsiders to the community due to the one-on-one setting and with a promise of confidentiality, but a lack of comfort was still seen in typing weaker ties.

This willingness to type has potential effects on the current and future roles of LibraryThing and Goodreads as boundary objects: Are users unlikely to type others participating in groups on the two sites? Should users be encouraged to type more? Will encouraging and better facilitating social ties have knock-on effects on social typing? These questions also apply to social typing in other online and offline community and information environments. Studies have been made of social types in contexts where information sharing and collaboration are factors, examining how the different types of other users affect the willingness to share (e.g. Olson, Grudin, & Horvitz, 2005; Wiese et al., 2011) or the roles that types play in sharing information and collaboration (e.g. Burnett et al., 2014; Pendleton & Chatman, 1998; Pettigrew, 1999; Turner & Fisher, 2006). However, no known studies have examined the motivations and willingness of users to type each other in social information environments. Further research on social types in online communities, information grounds, and digital libraries, with emphasis on this behavioral choice component, would shed light on the willingness to type other users and the implications for design, theory, and practice.

5.5. Theory

This section considers the relation of the findings discussed above and in Chapter 4 to the theoretical framework for social digital libraries and boundary object theory, in the context of social informatics and information behavior research. Since theoretical implications are discussed, the language of the theoretical framework (see Chapter 2, sections 2.6 and 2.7) is used throughout this section.

5.5.1. Social Digital Libraries

The theoretical framework for this study provided deep and descriptive analysis of the data collected. No theory can explain everything, and three theories together still miss out on some potential findings (although data can be reanalyzed using other theories and frames). Nevertheless, the combination of boundary object theory, the social worlds framework, and the theory of information worlds served to answer the research questions, and informally the theoretical framework has tested well. The survey developed, operationalizing these concepts,

was found to have acceptable reliability for exploratory research once appropriate items were dropped (see Chapter 4, section 4.2.1), with the exception of the boundary objects scale and, perhaps, the information value scale. Further refinement could further improve the survey instrument, of course, and full testing of the instrument and theory is left for another research study, but I believe this study has shown this combination to have much power for use with qualitative and quantitative methods.

5.5.1.1. Information behavior vs. information value. With such power, of course, comes the responsibility to be critical where there were minor issues during analysis. One of these is the broadness of the concepts of information behavior and information value. Buckland (1991) and Case (2012) have adopted broad definitions of information, and Jaeger and Burnett's (2010) view of information behavior is almost as broad. Information value, while facing a similar issue, had similar frequency in analysis here to other studies that have used the theory of information worlds. Narrowing the focus and applying slight caveats to definitions of these concepts might be appropriate.

5.5.1.2. Information behavior vs. activities. Another issue, referenced in Chapter 4, is that differences emerged in a few cases between information behavior and activities. Although these concepts are quite compatible in theory, a few interviewees agreed they shared common activities but not common information behavior. Other examples were also seen where information-related activities occurred, but could not be considered to be true normative information behavior, with a clear connection to information seeking, use, sharing, or avoidance. The distinctions that emerged between the two are reliant, to an extent, on how broad a view of information behavior is taken. My own view and operationalization was broader than some other information science researchers might take, influenced by the broad range of activities that Strauss (1978) considers to be possible in social worlds. Restricting his view to information-related activities still does not narrow the scope to those that all information scientists would consider information behavior. The different facets of these concepts may need annotations or memos to note, and subcodes for different types and degrees of information-relatedness and of information behavior (sharing, seeking, etc.) would be appropriate and useful when particular facets are of interest in a given study. This would parallel the different facets examined by models and theories of information behavior (see Case, 2012; Wilson, 1999), and could better account for the different breadth of information behaviors considered by different scholars,

models, and theories.[4] Gary Burnett (personal communication, Jul. 7, 2014) is working with other colleagues to construct a detailed codebook for the theory that refines many of the concepts, which may well be helpful towards addressing the issues identified in the previous two subsections.

5.5.1.3. Other difficult and edge cases. Difficult and edge cases existed in the continuum between translation, coherence, and convergence, which can have some overlap; translation was used to maintain convergence, a view not explicitly included in the theoretical framework. Continuing to keep coherence and convergence—and existing and emergent worlds—separate, but annotating or memoing for cases where the line between them is close or where translation involves maintaining convergence, appears an appropriate instruction for future use of this theoretical framework. The continuum between existing and emergent worlds was vague at times, and this was found to be the cause of many of the disagreements found during the intracoder reliability testing. In the coding process as a whole, this was most true for the concept of sites. The blogs referred to by LibraryThing user Sam could be associated with the emergent social and information world of the group, or with one or more existing social and information worlds that intersected with that of the group (see section 4.3.8.4). Another online community LibraryThing user Betty participated in included a site within an emergent world from the perspective of that community, but a site within an existing (and external) world from the perspective of LibraryThing. In analysis I reasoned that context was most important, and coded these under existing worlds, but the distinction between existing and emergent is not a line but a continuum, where examples like these end up sitting in the middle. Additional codes or clearer instructions on annotations or memos to provide context would clarify these difficult and edge cases.

5.5.1.4. Sites and technologies. A somewhat similar situation occurred with the distinctions between sites and technologies. These are both concepts from the social worlds perspective of Strauss (1978). Sites are places and spaces that information behavior or information-related activities take place within; technologies are tools that provide the capability to carry out such behavior and activities. Potential overlaps were identified between the two

---

[4] Particular thanks to Gary Burnett (personal communication, Jul. 3, 2014) for helpful discussion on these issues.

during the latter stages of analysis and the discussion of findings and conclusions with other researchers. When considering overlaps, one must remember the word "site" has two meanings within the context of this study: it may mean a web site, or it may mean a social world site. In some cases both meanings apply, and both sites and technologies may be invoked as phenomena. For example, interviewees used Facebook as both a web site and a social world site, in ways that required using the technology associated with it (see section 4.3.9.2). Rachelle's friends sending her links through Facebook led to Facebook serving as a social world site and space for particular information behavior and activities—the sending of links—*and* as technology that facilitated that behavior and activity.

In the case of social media service use the concepts of sites and technologies are inextricably tied together, but in other examples the concepts have important distinctions between them. Kevin's use of an iPad to access Goodreads (also discussed in section 4.3.9.2) is a case of the latter: the technology—the iPad—facilitated Kevin's information behavior and activities, but within sites and spaces for that behavior that it is not always connected to. Unlike Facebook's provision of a space (or site, in social world terms) for Rachelle's information behavior, Kevin's iPad does not provide such a space; it is only a technology that *may* be used in other spaces. In future research, emergent distinctions between sites and technologies must continue to be accounted for; greater theoretical and conceptual clarity between these concepts, and greater clarity in how to code for them, may be necessary additions to the framework.

5.5.2. Boundary Objects, Scope, and Scale

Along with the implications for theoretical research in social informatics and information behavior discussed above (section 5.4.4), at least one further implication exists for studies using boundary object theory and the concepts from it. On reflecting on her theory and how it had been used over 21 years, Star (2010) stated the scale and scope of those objects conceived of as boundary objects should be useful; conceiving of a word as a boundary object, for example, would not lead to much insight. Many of the other boundary objects identified in this study (see section 5.1.4.1) do or could fit most or all of the criteria in the original theory (Star & Griesemer, 1989; Star, 1989; see also section 2.7), and deserve to be called boundary objects. The scale and scope of their use is not near the level of LibraryThing or Goodreads.

These objects serve as small parts of the multi-scaled network of sociotechnical systems called sociotechnical infrastructure (Edwards et al., 2009; Ribes et al., 2012) and as part of the

wide range of scales, contexts, and systems studied in social informatics (Rosenbaum, 2014; Sawyer & Tapia, 2007). From a theoretical point of view, most studies will have a main boundary object, technology, and system of interest; in this case that was LibraryThing or Goodreads. This must remain the main focus; it defines the baseline when it comes to the scale and scope of this research. Nevertheless, even in research driven by a case study approach—as this dissertation has been—other objects and artifacts of potential interest should not be discarded altogether from further analysis. Doing so would place artificial restrictions on the potential objects that can serve as boundary objects in some form.[5] Instead, remaining pluralistic and flexible with regard to units and scale—as in the social worlds perspective (Clarke & Star, 2008; Strauss, 1978) and the theory of information worlds (Jaeger & Burnett, 2010)—is necessary.

Theories and theoretical perspectives used to study sociotechnical systems and infrastructure, information behavior, online communities, and digital libraries should continue to consider multiple units of analysis and scale, and consider the broad scope of the social, technical, sociotechnical, and organizational contexts of users' information behavior, the communities they are part of, and the technologies that they use. Further, researchers and theorists should be cognizant of and take care to consider issues of scope, scale, and context as they think about sociotechnical infrastructures and the design, development, use, and study of these contexts and systems.

5.6. Limitations

As with any study, the findings from this dissertation face some limitations. Because of the way groups were sampled, the content analysis and interviews may not have captured the full range of LibraryThing and Goodreads users' opinions of and experiences with using the two digital libraries within and across communities (as social and information worlds). Limiting the research to nine groups—with one having to be dropped due to determining the moderator was underage—and limiting the sampling for the survey and interviews to members and visitors to these nine groups means differences which may exist in other groups were not uncovered.

---

[5] Thanks to Lori Kendall (personal communication, Oct. 23, 2013) for helping to stimulate my thinking in this area.

Since sampling for the survey was not purely random—users could choose to participate or not and not all users of the nine groups were guaranteed to see the invitation to participate—it was impossible to rely on traditional inferential statistics—that assume a representative sample obtained through simple random sampling—to infer beyond the sample (i.e. the participating users). Selection bias—a form of sampling bias—may have generated results that are not representative, but one may assume that survey respondents are at least moderately representative of the population of users of the nine LibraryThing and Goodreads groups, allowing for conclusions to be inferred about users from the nine groups. Nonparametric statistics were used and the focus of statistical analysis to strengthen the findings of the survey.

The need to obtain consent from the moderators of the Goodreads groups prior to data collection—a condition of Goodreads' consent for this research to take place (see Appendix E)—led to the inability to study nine Goodreads groups whose moderator did not respond or declined to take part. The random sampling from popular LibraryThing and Goodreads groups reduced this limitation, creating a representative sample from these groups reflecting the broader population. While a pure random sample of survey participants could be obtained—due to the inability to construct a sampling frame and ethical concerns with requiring consent and responses—the random selection of groups helped improve the potential transferability of all findings. Providing compensation encouraged participants to respond to the survey, increasing the sample size. Interviewees provided insightful data and interviewing continued until saturation was reached, lessening the impact of the limited samples at each stage.

Using a case study approach to focus on LibraryThing and Goodreads places some limits on the generalizability of findings beyond these two settings. The results of the study say much about the nine groups, and the content analysis and interview findings have reasonable transferability to LibraryThing and Goodreads as a whole. Less can be said for sure about digital libraries as a whole. This is not participatory research—as I am not a frequent user of either site beyond the bounds of this study—and so internal knowledge of the two has been limited to what was known as part of conducting the study. Their nature as large, public digital libraries and inclusion of multiple features and facets allows for most results to have a degree of transferability to other digital library settings, with higher transferability to other social digital libraries with similar features, users, or content to LibraryThing and Goodreads. Comparing with

previous research literature, as done throughout this chapter, helps improve the degree of transferability.

One cannot conclude from this study that a particular method for supporting existing communities, the emergence of new ones, and collaboration within and between them is better than another one. While LibraryThing and Goodreads incorporate elements of wikis and social annotations (see sections 2.5.2.1 and 2.5.2.2), other digital libraries may be as successful (or not) by using other techniques, and play as significant roles in the social and information worlds of their users. Follow-up research with other digital libraries and with different users and user communities is necessary, as discussed earlier in this chapter.

Results and findings—as seen in Chapter 4 and earlier in this chapter—inform the theoretical framework incorporating boundary object theory, the social worlds perspective, and the theory of information worlds, but further research and testing is necessary to confirm if the conclusions drawn from this study apply to other digital libraries, social worlds, and information worlds. Findings lead to potential implications for social informatics, online communities, and information behavior research, when considered in light of existing literature, but no firm conclusions can be drawn across the breadth of these fields given the limited setting of this study.

Time and resources are limitations in any research study. This dissertation study was constructed to provide significant, insightful data into the roles LibraryThing and Goodreads play, as boundary objects, within and across the social and information worlds of their users. Using a sequential, multiphase mixed methods design allowed different types of data to be collected and synthesized, providing thick description of these environments, their use, and of their roles for users and user communities (see Chapter 4 and earlier in this chapter). It is my belief that successful achievement of this goal took place, and the data were found to be rich and insightful. Nevertheless, needing to complete this dissertation research without taking too much time placed limits on how much data could be gathered and analyzed and how many different methods could be used. While other methods such as social network analysis or focus groups could add further to the significance and insightfulness of the data collected, providing a fuller picture of LibraryThing and Goodreads in the context of their existing and emergent user communities and collaboration between them, the limitation of time meant those were left for future research by myself or other researchers. Time was a factor in determining sample size;

while more groups could have been looked at in the content analysis phase, or additional users surveyed or interviewed, this would have required additional time to collect and analyze the data in question. I believe the completed dissertation study strikes an appropriate balance, providing rich, complete data while being successful in completion within the time and with the resources available.

Some may consider the subjective, interpretive nature of this study, falling under the social paradigm of information science and taking information to be a socially constructed phenomenon, to be a limitation of the research. While this is a potential issue when looked at from a positivistic or post-positivistic perspective—and leads to some limitations to generalizability and transferability—much of the previous research literature, and all of the theories and perspectives, drawn on by this research take an interpretive and social constructionist stance to information, information systems, and social science research. Situating this study within the landscape of this existing research and theory required that the study—and I as a researcher—take a similar stance, as shown by the issues faced during the pilot test of the coding scheme and content analysis procedures (see section 3.7.1). While my biases and predispositions of a researcher have influenced the choices of paradigms, approaches, theories, and methods, it is believed that their use in this study is appropriate and justified. Biases and predispositions may have had subtle impact during the coding and analysis phases, but I did my best to put any biases aside and believe that any impact that was had was minimal.

5.7. Conclusions and Implications

This exploratory and descriptive dissertation research study examined the roles of two digital libraries, LibraryThing and Goodreads, as boundary objects within and across the existing and emergent communities of their users, seen as social and information worlds. Their roles in three processes taking place in these contexts were also examined: (a) translation, or the negotiation and reconciliation of users' intended meanings and understandings around information and knowledge; (b) coherence, or the extent of agreement within pre-existing communities on common community characteristics, understandings, and translations; and (c) convergence, or the extent of agreement within new, emergent communities on common community characteristics, understandings, and translations. A clear need was present for theoretical and practical research to see if and how digital libraries support collaboration, communities, and other social contexts (see the literature review in Chapter 2), and an

appropriate theoretical framework based in Star's boundary object theory and incorporating elements of Strauss's social worlds perspective and Burnett and Jaeger's theory of information worlds was constructed (see section 2.8). Through a mixed methods research design of multiple sequential phases, data was collected from users of five LibraryThing groups and four Goodreads groups in the form of messages, a survey questionnaire, and semi-structured interviews (see Chapter 3). This data was analyzed under the theoretical framework to improve understanding of the organizational, cultural, collaborative, and social contexts of digital libraries, contexts with important effects on users, communities, and information behavior.

LibraryThing and Goodreads were found to serve three roles, discussed in detail in section 5.2, as boundary objects in the existing and emergent social and information worlds of users from the nine groups:

- *structure*-based roles, where the digital libraries facilitate and support translation, coherence, and convergence of existing and emergent communities through the establishment of community and organizational structure;
- *values*-based roles, where the digital libraries facilitate and support translation, coherence, and convergence of existing and emergent communities through users sharing information values; and
- *social network*-based roles, where the digital libraries facilitate and support coherence and convergence of emergent communities through the establishment of social ties and community culture.

The potential implications of these roles and other findings, connected with the literature, are summarized below for digital library design and practice; research in digital libraries, social informatics, and information behavior; and for theory in these areas. In all cases, these implications should be tested through further research.

5.7.1. Digital Library Design and Practice

- Highlight translation processes and resources for users, and encourage leaders of communities within the digital library to do so, facilitating the negotiation and reconciliation of users' intended meanings and understandings of information and knowledge. These resources should provide structure by explaining the purpose and rules of the community and helping users through documentation (including frequently asked questions) and human aid. Digital library-wide rules, values, and

expectations should be made clear, but designers and practitioners should be willing to engage in translation and negotiation over these with the pre-existing and newly emergent communities of users of the digital library.

- Provide for user profiles and encourage users to fill them out, if comfortable doing so; separate sites and spaces for off-topic discussion should be provided. These will allow users to build social ties, connections, and relationships between each other, should they so desire.

- Target the right features at the right audience, taking a sociotechnical approach that provides technology and community features, but tailored to those who want them; features should not be pushed out just because they might support a small part of the audience. Such features should support the roles identified in this study, allowing users to establish community and organizational structure, shared values of given types of information, and social ties.

- Encourage users' boundary spanning—their crossing of boundaries between multiple communities—by facilitating and encouraging linking; bringing in related content automatically (but with the ability to turn it off); and encouraging interaction between administrators, moderators, boundary spanners, and other active members about the digital library and the communities it serves.

- Span boundaries and work with other practitioners and researchers beyond one's home discipline towards solving problems of digital library design and practice.

5.7.2. Research

- Consider the full context of social digital libraries as they are used by individuals, groups, communities, and organizations, including demographic and background variables that may impact use. Consider deeper dives or examination of other digital libraries, with emphasis on those that have less overt social features.

- Vary the communities, phenomena, and/or platforms studied, to complement the findings and implications seen here and explore them in different contexts (e.g. curation practices, mobile information sharing, and social media).

- Examine in detail the nature, scope, and impact of information values—the strongest factor found to influence the roles that LibraryThing and Goodreads played—in the roles played by digital libraries and other sociotechnical systems. Consider drawing

on frameworks for values in sociotechnical systems design, such as those suggested by Shilton, Koepfler, and Fleischmann (2013; Fleischmann, 2007b), and/or the view of information value offered by the theory of information worlds. Consider various degrees and levels of information, knowledge, and value sharing; taking a longitudinal view; and/or examining the relationships between values and other characteristics of communities.

- Work on a boundary-sensitive research agenda, and have awareness of such a view and of social and community theories of information. Such theories may include the social worlds perspective, the theory of information worlds, boundary object theory, information grounds, everyday life information seeking, social network analysis / theory, and actor-network theory; the concepts of gatekeepers and boundary spanners serve as a potential framing.

- Explore and examine in greater detail the motivations and willingness of users to type each other in social information environments.

- Look to span boundaries as a researcher and work with other researchers, theorists, and practitioners others beyond one's home discipline. Researchers in digital libraries, social informatics, online communities, and information behavior should not be insular, but should be talking to one another.

5.7.3. Theory

- Further develop and test the survey instrument to improve its reliability for non-exploratory research.

- Consider minor revisions to the theoretical framework for social digital libraries and the instructions used in coding and analysis to address issues uncovered in the distinctions between information behavior and information value; information behavior and information-related activities; translation, coherence, and convergence; and existing and emergent worlds..

- Remain pluralistic in considering multiple units of analysis and scale, and other boundary objects as a part (if not the focus) of the sociotechnical system. Consider issues of scope, scale, and context when thinking and theorizing about such sociotechnical infrastructures and systems.

5.7.4. Summary

Digital libraries must support pre-existing and newly emergent communities and collaborations. The study reported in this dissertation of LibraryThing and Goodreads, conceived as social digital libraries and boundary objects, found they play at least three important roles in the processes of coherence and convergence of common community characteristics and understandings: establishing community and organizational structure, facilitating sharing of information values, and supporting social ties and community culture. Digital library designs and services should support these roles and users' social information behavior across the existing and emergent communities they are part of. Further research should look at deeper facets of these roles, other digital libraries (with emphasis on those with less overt social features), and other ICTs in light of the processes of coherence and convergence, taking a boundary-sensitive view of information phenomena in community and collaborative contexts.

APPENDIX A

INVITATION LETTERS AND INFORMED CONSENT

A.1. Goodreads Moderators

A.1.1. Invitation Letter

Subject: Would like your group to participate in a research study on Goodreads and its role in communities

Hi, my name is Adam Worrall, and I am a doctoral candidate at the Florida State University School of Library and Information Studies. I'd like your permission, as group moderator, to include the [Group Name] group as part of a research study of Goodreads and its role in groups and communities.

The purpose of this study is to look at the roles digital libraries, such as Goodreads, play in the groups and communities their users are part of. I am interested in your members' use of Goodreads as individuals and in interactions with others in groups and communities. I would like to collect data in three ways:

1. Messages posted to the group's discussion boards
2. A survey of users of and visitors to the group, via an invitation posted to the group's discussion board
3. Interviews with a subset of survey respondents

This data will allow me to see the roles the site serves for group users and other, broader communities of users, and should improve our understanding of how these sites and other digital libraries can relate to groups and communities. The study is being conducted independently of but with the consent of Goodreads.

Completing this research will have minimal risks to you and members of your group as participants, believed to be no more than the risks you experience in everyday life. By participating you and members of your group may benefit indirectly, as users of a digital library, from improved digital library design, usability, services, and an overall better understanding of

the social elements of digital libraries. Those users who participate in and complete the survey will be entered into a drawing for one of ten $25 gift cards. They may choose between gift cards from three bookstores: Amazon.com, Barnes and Noble, and Books-A-Million. Moderators, as users of the group, may also take part in all phases of the study, complete the survey, and be entered into the drawing.

I've included a link below to an informed consent statement, which I invite you to read carefully. If you agree to having your group be part of this study, click the "I consent" button at the bottom of the statement. Before doing so, however, please feel free to contact me via e-mail at [My FSU e-mail address] should you have any questions. Thank you in advance for your participation!

[link to informed consent here]

Adam Worrall

Doctoral Candidate, Florida State University

School of Library and Information Studies

College of Communication and Information

[My FSU e-mail address]

A.1.2. Informed Consent Statement

FSU Behavioral Consent Form

"The Roles of Digital Libraries as Boundary Objects Within and Across Social and Information Worlds"

You and your group, [Group Name], are invited to be in a research study of Goodreads and its role in groups and communities. You and members of your group were selected as possible participants because you were listed as one of the more popular groups on the Goodreads site. I ask you to read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Adam Worrall, a doctoral candidate at the Florida State University School of Library and Information Studies, under the supervision of Dr. Michelle M. Kazmer, an associate professor at the School. The study is being conducted independently of but with the consent of Goodreads.

Background Information:

The purpose of this study is to look at the roles digital libraries play in the groups and communities their users are part of. Goodreads is one example of a digital library, providing content and services to its users through an organization. I am interested in your members' use of Goodreads as individuals and in interactions with others in groups and communities. I would collect data in three ways:

1. Messages posted to the group's discussion boards
2. A survey of users of and visitors to the group, via an invitation posted to the group's discussion board
3. Interviews with a subset of survey respondents

This data will allow me to see the roles the site serves for group users and other, broader communities of users, and should improve our understanding of how these sites and other digital libraries can relate to groups and communities.

Procedures:

If you agree that your group can be in this study, I would post an invitation letter in your group's discussion board inviting members of your group (including yourself) to complete a short online survey, which asks about their experience with, and use of, Goodreads as an individual and as part of groups and communities. If they choose to participate, they will be presented with a list of statements about the site and their use of it, and asked if they agree or disagree with each one. They will be asked for basic demographic and usage information at the end of the survey. The survey should take users no more than 15-20 minutes to complete. After data collection for the survey is complete, a selection of those who completed it will be invited via e-mail to participate in a follow-up interview with me, where I would ask about their experience with and use of

Goodreads as an individual and as part of groups and communities. Individual consent will be obtained from all participating users prior to their completion of the survey and before taking part in an interview.

Risks and benefits of being in the Study:

Completing this research will have minimal risks to you and members of your group as participants, believed to be no more than the risks you experience in everyday life. By participating you and members of your group may benefit indirectly, as users of a digital library, from improved digital library design, usability, services, and an overall better understanding of the social elements of digital libraries.

Compensation:

For participating in the survey, members who complete it will be entered into a drawing for 10 $25 gift cards. They may choose between gift cards from three bookstores: Amazon.com, Barnes and Noble, and Books-A-Million. This random drawing will take place after the conclusion of the survey data collection. Members must complete the survey questionnaire and provide their e-mail address to be entered into the drawing.

Confidentiality:

The records of this study will be kept private and confidential to the extent permitted by law. In any sort of report I might publish, I will not include any information making it possible to identify you, group members, or other participants. Research records will be stored securely and only the researcher, Adam Worrall, will have access to the records. All research records will be wiped, deleted, or shredded five years after completion of the survey or interview or April 30th, 2019, whichever is sooner.

Members e-mail addresses, collected at the end of the survey, may be used to send a gift card if they are selected in the drawing. At the end of the survey, they will be asked if I may contact them via e-mail for a possible follow-up interview. Their e-mail addresses will remain confidential and will not be used for other purposes.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision to participate or not will not affect your current or future relations with Florida State University, Goodreads, or any other site, institution, or organization. If you decide to participate, you and members of your group are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Adam Worrall, a doctoral candidate, under the supervision of Dr. Michelle M. Kazmer, an associate professor, of the Florida State University School of Library and Information Studies. If you have any questions, you are encouraged to contact me via e-mail at [My FSU e-mail address] or via phone at [mobile phone number], or Dr. Kazmer via e-mail at [FSU e-mail address] or via phone at [mobile phone number].

If you have any questions or concerns about this study and would like to talk to someone other than the researcher, you are encouraged to contact the FSU Institutional Review Board (IRB) at 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742, or (850) 644-8633, or by email at humansubjects@magnet.fsu.edu.

I encourage you to print a copy of this information to keep for your records, or you may always access it at [permanent URL].

Statement of Consent:

I have read the above information. I have asked questions and have received answers. By clicking the "I consent" button below, I consent for my group to participate in the study.

A.2. Survey

A.2.1. Invitation Letters for Users

    A.2.1.1. Letter.

Subject: Online survey for a research study of [LibraryThing / Goodreads] and its role in communities

Hi, my name is Adam Worrall, and I am a doctoral candidate at the Florida State University School of Library and Information Studies. I'd like to invite you, a member of the [Group Name] group on [LibraryThing / Goodreads], to complete an online survey for a research study of [LibraryThing / Goodreads] and its role in groups and communities. You can take the survey by clicking on the following link:

[link to survey here]

The purpose of this study is to look at the roles digital libraries, such as [LibraryThing / Goodreads], play in the groups and communities their users are part of. I am interested in your use of [LibraryThing / Goodreads] as an individual and in your interactions with others in groups and communities. Your survey responses will help me to see the roles the site serves for you, other users, and broader communities of users, and should improve our understanding of how these sites and other digital libraries can relate to groups and communities. The study is being conducted independently of [LibraryThing / Goodreads].

The survey should take you no more than 15-20 minutes to complete. Completing the survey has minimal risks to you as a participant, believed to be no more than the risks you experience in everyday life. By participating you may benefit indirectly, as a user of a digital library, from improved digital library design, usability, services, and an overall better understanding of the social elements of digital libraries. For completing this survey, you will be entered into a drawing for 10 $25 gift cards. You may choose between gift cards from three bookstores: Amazon.com, Barnes and Noble, and Books-A-Million.

You can take the survey by clicking on the link below. Please feel free to contact me via e-mail at [My FSU e-mail address] should you have any questions. Thank you in advance for your participation!

[link to survey here]

Adam Worrall
Doctoral Candidate, Florida State University
School of Library and Information Studies
College of Communication and Information
[My FSU e-mail address]

A.2.1.2. Reminder.

Subject: Reminder of an online survey on [LibraryThing / Goodreads] and its role in communities

Hi, my name is Adam Worrall, and I am a doctoral candidate at the Florida State University School of Library and Information Studies. I'd like to remind you, a member of the [Group Name] group on [LibraryThing / Goodreads], of an invitation to complete an online survey for a research study of [LibraryThing / Goodreads] and its role in groups and communities. If you have already taken the survey, I thank you for your participation and help! You need not read this e-mail further. If you have not taken the survey, you may do so by clicking on the following link:

[link to survey here]

To remind you, the purpose of this study is to look at the roles digital libraries, such as [LibraryThing / Goodreads], play in the groups and communities their users are part of. I am interested in your use of [LibraryThing / Goodreads] as an individual and in your interactions with others in groups and communities. Your survey responses will help me to see the roles the site serves for you, other users, and broader communities of users, and should improve our

understanding of how these sites and other digital libraries can relate to groups and communities. The study is being conducted independently of [LibraryThing / Goodreads].

The survey should take you no more than 15-20 minutes to complete. Completing the survey has minimal risks to you as a participant, believed to be no more than the risks you experience in everyday life. By participating you may benefit indirectly, as a user of a digital library, from improved digital library design, usability, services, and an overall better understanding of the social elements of digital libraries. For completing this survey, you will be entered into a drawing for 10 $25 gift cards. You may choose between gift cards from three bookstores: Amazon.com, Barnes and Noble, and Books-A-Million.

You can take the survey by clicking on the link below. Please feel free to contact me via e-mail at [My FSU e-mail address] should you have any questions. Thank you in advance for your participation!

[link to survey here]

Adam Worrall
Doctoral Candidate, Florida State University
School of Library and Information Studies
College of Communication and Information
[My FSU e-mail address]

A.2.2. Invitation Posts for Groups

(Note: For the groups, the invitation post was the same for the initial invitation and for the reminders.)
Subject: Online survey for a research study on [LibraryThing / Goodreads] and its role in communities

Hi, my name is Adam Worrall, and I am a doctoral candidate at the Florida State University School of Library and Information Studies. I'd like to invite all members of and visitors to

[Group Name] to complete an online survey for a research study of [LibraryThing / Goodreads] and its role in groups and communities. You can take the survey by clicking on the following link:

[link to survey here]

The purpose of this study is to look at the roles digital libraries, such as [LibraryThing / Goodreads], play in the groups and communities their users are part of. I am interested in your use of [LibraryThing / Goodreads] as an individual and in your interactions with others in groups and communities. Your survey responses will help me to see the roles the site serves for you, other users, and broader communities of users, and should improve our understanding of how these sites and other digital libraries can relate to groups and communities. The study is being conducted independently of [LibraryThing / Goodreads].

The survey should take you no more than 15-20 minutes to complete. Completing the survey has minimal risks to you as a participant, believed to be no more than the risks you experience in everyday life. By participating you may benefit indirectly, as a user of a digital library, from improved digital library design, usability, services, and an overall better understanding of the social elements of digital libraries. For completing this survey, you will be entered into a drawing for 10 $25 gift cards. You may choose between gift cards from three bookstores: Amazon.com, Barnes and Noble, and Books-A-Million.

You can take the survey by clicking on the link below. Please feel free to contact me via e-mail at [My FSU e-mail address] should you have any questions. Thank you in advance for your participation!

[link to survey here]

Adam Worrall
Doctoral Candidate, Florida State University
School of Library and Information Studies

College of Communication and Information

[My FSU e-mail address]

A.2.3. Informed Consent Statement

FSU Behavioral Consent Form

"The Roles of Digital Libraries as Boundary Objects Within and Across Social and Information Worlds"

You are invited to be in a research study of [LibraryThing / Goodreads] and its role in groups and communities. You were selected as a possible participant because you visited or are a member of a group on the [LibraryThing / Goodreads] site. I ask you to read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Adam Worrall, a doctoral candidate at the Florida State University School of Library and Information Studies, under the supervision of Dr. Michelle M. Kazmer, an associate professor at the School. The study is being conducted independently of [LibraryThing / Goodreads].

Background Information:

The purpose of this study is to look at the roles digital libraries play in the groups and communities their users are part of. [LibraryThing / Goodreads] is one example of a digital library, providing content and services to its users through an organization. I am interested in your use of [LibraryThing / Goodreads] as an individual and in your interactions with others in communities. These communities may be based in a common activity, occupation, interest, topic, location, or other common thread, and include the [LibraryThing / Goodreads] groups you frequent. Your responses will help me to see the roles the site serves for you, other users, and broader communities of users, and should improve our understanding of how these sites and other digital libraries can relate to groups and communities.

Procedures:

If you agree to be in this study, you would complete a short online survey questionnaire, which asks about your experience with and use of [LibraryThing / Goodreads] as an individual and as part of groups and communities. You will be presented with a list of statements about the site and your use of it, and asked if you agree or disagree with each one. You will be asked for basic demographic and usage information at the end of the survey. I estimate the survey should take you no more than 15-20 minutes to complete. You will have until [date of survey end] to complete the survey questionnaire.

Risks and benefits of being in the Study:

The study has minimal risks to you as a participant, believed to be no more than the risks you experience in everyday life. By participating you may benefit indirectly, as a user of a digital library, from improved digital library design, usability, services, and an overall better understanding of the social elements of digital libraries.

Compensation:

For participating in this survey, you will be entered into a drawing for 10 $25 gift cards. You may choose between gift cards from three bookstores: Amazon.com, Barnes and Noble, and Books-A-Million. This random drawing will take place after [date of survey end]. You must complete the survey questionnaire and provide your e-mail address to be entered into the drawing.

Confidentiality:

The records of this study will be kept private and confidential to the extent permitted by law. In any sort of report I might publish, we will not include any information making it possible to identify you or other participants. Research records will be stored securely and only the researcher, Adam Worrall, will have access to the records. All research records will be wiped, deleted, or shredded five years after your completion of the survey or April 30th, 2019, whichever is sooner.

Your e-mail address, collected at the end of the survey, may be used to send a gift card if you are selected in the drawing. At the end of the survey, you will be asked if I may contact you via e-mail for a possible follow-up interview. Your e-mail address will remain confidential and will not be used for other purposes.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision to participate or not will not affect your current or future relations with Florida State University, [LibraryThing / Goodreads], or any other site, institution, or organization. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Adam Worrall, a doctoral candidate, under the supervision of Dr. Michelle M. Kazmer, an associate professor, of the Florida State University School of Library and Information Studies. If you have any questions, you are encouraged to contact me via e-mail at [My FSU e-mail address] or via phone at [mobile phone number], or Dr. Kazmer via e-mail at [FSU e-mail address] or via phone at [mobile phone number].

If you have any questions or concerns about this study and would like to talk to someone other than the researcher, you are encouraged to contact the FSU Institutional Review Board (IRB) at 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742, or (850) 644-8633, or by email at humansubjects@magnet.fsu.edu.

I encourage you to print a copy of this information to keep for your records, or you may always access it at [permanent URL].

Statement of Consent:

I have read the above information. I have asked questions and have received answers. By clicking the "Next" button below, I confirm that I am at least 18 years old and consent to participate in the study.

A.3. Interviews

A.3.1. Invitation Letter

Subject: Follow-up interview on [LibraryThing / Goodreads] and its role in communities

Hi, my name is Adam Worrall, and I am a doctoral candidate at the Florida State University School of Library and Information Studies. You previously completed an online survey for a research study of [LibraryThing / Goodreads] and its role in groups and communities, and agreed I could contact you for follow-up research. I'd now like to invite you to participate in a follow-up interview to further discuss your use of [LibraryThing / Goodreads] as an individual and in your interactions with others in groups and communities.

To remind you, the purpose of this study is to look at the roles digital libraries, such as [LibraryThing / Goodreads], play in the communities their users are part of. These communities may be based in a common activity, occupation, interest, topic, location, or other common thread, and include the [LibraryThing / Goodreads] groups you frequent. Your responses to interview questions will help me to see the roles the site serves for you, other users, and broader communities of users, and should improve our understanding of how these sites and other digital libraries can relate to groups and communities. The study is being conducted independently of [LibraryThing / Goodreads].

If you agree to take part, I will interview you and ask you about your experience with and use of [LibraryThing / Goodreads] as an individual and as part of groups and communities. The interview would take about an hour, using your choice of online audiovisual media (Skype, Google Plus Hangouts, or Apple FaceTime) or telephone. With your explicit permission, the interview will be audio recorded using computer software. Being interviewed has minimal risks to you as a participant, believed to be no more than the risks you experience in everyday life. By participating you may benefit indirectly, as a user of a digital library, from improved digital library design, usability, services, and an overall better understanding of the social elements of digital libraries. You may directly benefit from reflecting on your experience with and use of [LibraryThing / Goodreads] as part of the interview.

Records of your interview and your identity will be kept private and confidential to the extent permitted by law. Research records will be stored securely and only I, Adam Worrall, will have access to the records.

Would you be willing to be interviewed? If so, please reply to this e-mail with your preference of media, and we can work on setting up when the interview will take place. If you have any questions, please ask them in your reply. Thank you in advance for your participation!

Adam Worrall

Doctoral Candidate, Florida State University

School of Library and Information Studies

College of Communication and Information

[My FSU e-mail address]

A.3.2. Informed Consent Statement

FSU Behavioral Consent Form

"The Roles of Digital Libraries as Boundary Objects Within and Across Social and Information Worlds"

You are invited to be in a research study of [LibraryThing / Goodreads] and its role in groups and communities. You were selected as a possible participant because you visited or are a member of a group on the [LibraryThing / Goodreads] site, and previously completed a survey questionnaire and provided your e-mail address for a potential follow-up interview. I ask you to read this form and ask any questions you may have before agreeing to be in this phase of the study.

This study is being conducted by Adam Worrall, a doctoral candidate at the Florida State University School of Library and Information Studies, under the supervision of Dr. Michelle M. Kazmer, an associate professor at the School. The study is being conducted independently of [LibraryThing / Goodreads].

Background Information:

The purpose of this study is to look at the roles digital libraries play in the groups and communities their users are part of. [LibraryThing / Goodreads] is one example of a digital library, providing content and services to its users through an organization. I am interested in your use of [LibraryThing / Goodreads] as an individual and in your interactions with others in communities. These communities may be based in a common activity, occupation, interest, topic, location, or other common thread, and include the [LibraryThing / Goodreads] groups you frequent. Your responses to interview questions will help me to see the roles the site serves for you, other users, and broader communities of users, and should improve our understanding of how these sites and other digital libraries can relate to groups and communities.

Procedures:

If you agree to be in this study, you would participate in an interview with me where I would ask about your experience with and use of [LibraryThing / Goodreads] as an individual and as part of groups and communities. The interview will take place using your choice of online audiovisual media or telephone. If you select the online option, the interview may take place using Skype, Google Plus Hangouts, or Apple FaceTime at your choosing. I estimate the interview will take about an hour to complete. With your explicit permission, the interview will be audio recorded using computer software.

Risks and benefits of being in the Study:

The study has minimal risks to you as a participant, believed to be no more than the risks you experience in everyday life. By participating you may benefit indirectly, as a user of a digital library, from improved digital library design, usability, services, and an overall better understanding of the social elements of digital libraries. You may directly benefit from reflecting on your experience with and use of [LibraryThing / Goodreads] as part of the interview.

Confidentiality:

The records of this study will be kept private and confidential to the extent permitted by law. In any sort of report I might publish, we will not include any information making it possible to identify you or other participants. Research records, including the audio recording, transcript,

and interviewer's notes will be stored securely and only the researcher, Adam Worrall, will have access to the records. All research records will be wiped, deleted, or shredded five years after the completion of this interview or April 30th, 2019, whichever is sooner.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision to participate or not will not affect your current or future relations with Florida State University, [LibraryThing / Goodreads], or any other site, institution, or organization. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Adam Worrall, a doctoral candidate, under the supervision of Dr. Michelle M. Kazmer, an associate professor, of the Florida State University School of Library and Information Studies. You may ask any questions you have at the beginning of the interview. If you have a question later, you are encouraged to contact me via e-mail at [My FSU e-mail address] or via phone at [mobile phone number], or Dr. Kazmer via e-mail at [FSU e-mail address] or via phone at [mobile phone number].

If you have any questions or concerns about this study and would like to talk to someone other than the researcher(s), you are encouraged to contact the FSU Institutional Review Board (IRB) at 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742, or (850) 644-8633, or by email at humansubjects@magnet.fsu.edu.

I encourage you to print a copy of this information to keep for your records, or you may always access it at [permanent URL].

Statement of Consent:

I have read the above information. I have asked questions and have received answers. By clicking the "Provide Consent" button below, I consent to participate in the study.

APPENDIX B

SURVEY INSTRUMENT AND SCALES

B.1. Survey Instrument

Note: All questions except those under "Demographics and Usage" were randomized per participant, as discussed in section 3.5.5, and displayed with the five response choices available for participants to select. Questions were pretested (see section 3.5.5) and minor adjustments were made based on results of the content analysis phase and the pretest.

The following are statements relating to your experience with and use of [LibraryThing / Goodreads] as an individual and as part of communities. These communities may be based in a common activity, occupation, interest, topic, location, or other common thread. Such communities include the [LibraryThing / Goodreads] groups you frequent. Please carefully read each statement and then assess, to the best of your ability, if you strongly agree (5), agree, are neutral, disagree, or strongly disagree (1) with its content. Many statements are intended to measure the same concepts or phenomena and may seem similar, but please read each carefully to identify differences that may change your choice of response.

Boundary Objects

1. I am part of multiple communities that use [LibraryThing / Goodreads].
2. When I need to find information or resources, I use the [LibraryThing / Goodreads] communities I am part of to help me.
3. Information and resources I find using the [LibraryThing / Goodreads] communities I am part of are useful to me.
4. My use of [LibraryThing / Goodreads] does not change when interacting with the different communities I am part of.
5. When interacting with the different communities I am part of, I find [LibraryThing / Goodreads] works and functions similarly in each case.

Translation

1. [LibraryThing / Goodreads] helps me better understand people.
2. [LibraryThing / Goodreads] helps me better understand books, movies, and other media.

3. [LibraryThing / Goodreads] allows me to interact with people from multiple communities.

4. Using [LibraryThing / Goodreads], I interact with people from multiple communities.

5. [LibraryThing / Goodreads] allows me to work together with people in multiple communities.

6. Using [LibraryThing / Goodreads], I work together with people in multiple communities.

Coherence and Convergence

1. [LibraryThing / Goodreads] helps me build common understanding with others I interact with on the Web site.

2. [LibraryThing / Goodreads] fits well into the communities I am part of.

3. I find the design and functionality of [LibraryThing / Goodreads] helps build common understanding with others I interact with on the Web site.

4. I find the management and administration of [LibraryThing / Goodreads] helps build common understanding with others I interact with on the Web site.

Information Worlds (IW) and Social Worlds (SW)

Social norms (IW).

1. There are common standards or norms of behavior on [LibraryThing / Goodreads].

2. Users of [LibraryThing / Goodreads] generally conform to common standards or norms of behavior.

3. My personal standards or norms of behavior match with those of other [LibraryThing / Goodreads] users.

4. The common standards or norms of behavior in the communities I am part of match well with those of other [LibraryThing / Goodreads] users.

5. I follow common standards or norms of behavior when using [LibraryThing / Goodreads].

Social types (IW).

1. I see users of [LibraryThing / Goodreads] as playing specific roles or parts in their communities.

2. I believe other users of [LibraryThing / Goodreads] see me as playing specific roles or parts in my communities.

271

3. Users of [LibraryThing / Goodreads] are expected to play specific roles or parts in their communities.

4. The roles or parts played by users of [LibraryThing / Goodreads] are commonly accepted in the communities I am part of.

Information values (IW).

1. I have similar values of particular books, movies, and media as other [LibraryThing / Goodreads] users I interact with.

2. I have similar values of the messages that people post in [LibraryThing / Goodreads] groups as other users I interact with.

3. Users in [LibraryThing / Goodreads] groups are expected to share similar values of particular books, movies, and media.

4. Users of [LibraryThing / Goodreads] are expected to share similar values of particular messages people post in groups.

Information behaviors (IW) / activities (SW).

1. I believe I look for and find information and resources similar to those other [LibraryThing / Goodreads] users I interact with look for.

2. I believe I use information and resources in similar ways to other [LibraryThing / Goodreads] users I interact with.

3. I believe I share information and resources in similar ways to other [LibraryThing / Goodreads] users I interact with.

4. I believe I share information and resources in similar ways with people who use [LibraryThing / Goodreads] and people who do not.

5. I share common interest in at least one activity with other [LibraryThing / Goodreads] users I interact with.

6. I take part in the same activities as other [LibraryThing / Goodreads] users I interact with.

Organizations (SW).

1. [LibraryThing / Goodreads] helps further the activities of the communities I am part of.

2. The [LibraryThing / Goodreads] communities I interact with help further the activities we share.

3. I consider myself part of an organization [LibraryThing / Goodreads] helped create.

4. I consider [LibraryThing / Goodreads] to be an organization I am part of.

Sites (SW).

1. The [LibraryThing / Goodreads] Web site plays a role or part in the activities of the communities I am part of.

2. I consider [LibraryThing / Goodreads] to be a common space.

3. I consider [LibraryThing / Goodreads] to be central to the communities I am part of.

4. [LibraryThing / Goodreads] serves as a space for sharing information and knowledge within communities.

5. [LibraryThing / Goodreads] serves as a space for sharing information and knowledge between communities.

Technologies (SW).

1. [LibraryThing / Goodreads] provides the technology that communities I am part of use to interact.

2. The technology provided by [LibraryThing / Goodreads] is used during the activities of the communities I am part of.

3. The technology provided by [LibraryThing / Goodreads] is central to the communities I am part of.

4. The technology provided by [LibraryThing / Goodreads] allows me to share information and knowledge with others.

Demographics and Usage

1. What is your gender?

   ( ) Male   ( ) Female   ( ) Other   ( ) Prefer not to answer

2. What was your age at your last birthday?

   [   ]

   [Note: data for participants under 18 and over 65 will be deleted prior to analysis.]

3. What is your highest completed level of education?

   ( ) Have not completed high school (or equivalent)

   ( ) High school diploma (or equivalent)

   ( ) Associate's (two-year) degree

   ( ) Bachelor's (four-year) degree

( ) Master's degree

( ) Professional degree (JD, MD, etc.)

( ) Doctoral degree (PhD, EdD, etc.)

( ) Other - please specify: _____

( ) Prefer not to answer

4. How many hours do you spend using the Internet each week?

    [   ]

5. How many hours do you spend using [LibraryThing / Goodreads] each week?

    [   ]

6. How many hours do you spend using [LibraryThing / Goodreads] groups each week?

    [   ]

7. Which of the services listed below do you use at least once each week? Please check all that

    apply.

    [   ] Facebook   [   ] [Goodreads / LibraryThing]

    [   ] Twitter   [   ] Shelfari

    [   ] Google Plus   [   ] Foursquare

    [   ] LinkedIn   [   ] Pinterest

    [   ] Instagram   [   ] Flickr

    [   ] Blogging services (WordPress, Blogger, Tumblr, etc.)

Participation

Thank you for participating in this survey and research study! There are just three more brief
questions for you to answer about your participation:

1. For completing this survey, you will be entered into a drawing for one of 10 $25
   Amazon.com, Barnes and Noble, or Books-A-Million gift cards. Please indicate your
   preference and enter an e-mail address below where the gift card should be sent if you are
   selected to receive one. This e-mail will only be used to send the gift card and shall remain
   confidential.

        ( ) Amazon.com   ( ) Barnes and Noble   ( ) Books-A-Million

        E-mail address: [   ]

2. Would you be interested in participating in a follow-up interview about your use of
   [LibraryThing / Goodreads]?

( )   Yes, use the e-mail address I gave above to contact me. (Thank you for your interest!)

( )   Yes, but use a different e-mail address to contact me. (This e-mail will only be used to contact you for an interview and shall remain confidential. Thank you for your interest!)

[_____]

( )   No

3. Would you like to receive a report summarizing the findings from and conclusions of this research, once it is complete?

( )   Yes, use the e-mail address I gave above to send me the report.

( )   Yes, but use a different e-mail address to send me the report. (This e-mail will only be used to send you the report and shall remain confidential.)

[_____]

( )   No

Thank you again for participating! Note that you will not be able to change your answers once you click the Finish button below to complete the survey. If you would like to change or review your answers, please use the Back (<<) button to do so.

B.2. Final Likert Scales

Translation (α = 0.707)

1. [LibraryThing / Goodreads] helps me better understand people.
2. [LibraryThing / Goodreads] helps me better understand books, movies, and other media.
3. [LibraryThing / Goodreads] allows me to interact with people from multiple communities.
4. Using [LibraryThing / Goodreads], I interact with people from multiple communities.
5. [LibraryThing / Goodreads] allows me to work together with people in multiple communities.
6. Using [LibraryThing / Goodreads], I work together with people in multiple communities.

Coherence and Convergence (α = 0.749)

1. [LibraryThing / Goodreads] helps me build common understanding with others I interact with on the Web site.
2. [LibraryThing / Goodreads] fits well into the communities I am part of.

3. I find the design and functionality of [LibraryThing / Goodreads] helps build common understanding with others I interact with on the Web site.

4. I find the management and administration of [LibraryThing / Goodreads] helps build common understanding with others I interact with on the Web site.

Social Norms (α = 0.734)

1. There are common standards or norms of behavior on [LibraryThing / Goodreads].

2. Users of [LibraryThing / Goodreads] generally conform to common standards or norms of behavior.

3. My personal standards or norms of behavior match with those of other [LibraryThing / Goodreads] users.

4. The common standards or norms of behavior in the communities I am part of match well with those of other [LibraryThing / Goodreads] users.

5. I follow common standards or norms of behavior when using [LibraryThing / Goodreads].

Social Types (α = 0.745)

1. I see users of [LibraryThing / Goodreads] as playing specific roles or parts in their communities.

2. I believe other users of [LibraryThing / Goodreads] see me as playing specific roles or parts in my communities.

3. Users of [LibraryThing / Goodreads] are expected to play specific roles or parts in their communities.

Information Values (α = 0.697)

1. I have similar values of particular books, movies, and media as other [LibraryThing / Goodreads] users I interact with.

2. I have similar values of the messages that people post in [LibraryThing / Goodreads] groups as other users I interact with.

3. Users in [LibraryThing / Goodreads] groups are expected to share similar values of particular books, movies, and media.

4. Users of [LibraryThing / Goodreads] are expected to share similar values of particular messages people post in groups.

Information Behaviors / Activities (α = 0.823)

1. I believe I look for and find information and resources similar to those other [LibraryThing / Goodreads] users I interact with look for.
2. I believe I use information and resources in similar ways to other [LibraryThing / Goodreads] users I interact with.
3. I believe I share information and resources in similar ways to other [LibraryThing / Goodreads] users I interact with.
4. I take part in the same activities as other [LibraryThing / Goodreads] users I interact with.

Organizations (α = 0.730)

1. [LibraryThing / Goodreads] helps further the activities of the communities I am part of.
2. The [LibraryThing / Goodreads] communities I interact with help further the activities we share.
3. I consider myself part of an organization [LibraryThing / Goodreads] helped create.
4. I consider [LibraryThing / Goodreads] to be an organization I am part of.

Sites (α = 0.729)

1. The [LibraryThing / Goodreads] Web site plays a role or part in the activities of the communities I am part of.
2. I consider [LibraryThing / Goodreads] to be a common space.
3. I consider [LibraryThing / Goodreads] to be central to the communities I am part of.
4. [LibraryThing / Goodreads] serves as a space for sharing information and knowledge within communities.
5. [LibraryThing / Goodreads] serves as a space for sharing information and knowledge between communities.

Technologies (α = 0.829)

1. [LibraryThing / Goodreads] provides the technology that communities I am part of use to interact.
2. The technology provided by [LibraryThing / Goodreads] is used during the activities of the communities I am part of.
3. The technology provided by [LibraryThing / Goodreads] is central to the communities I am part of.

APPENDIX C
INTERVIEW QUESTIONS

- How did you come to interact with this/these user(s)?

- Did you know this/these user(s) previously? If so, how did you know them? If not, how did you meet them and begin interacting with them?

- What role or roles did [LibraryThing / Goodreads] play in this interaction?

- Did standards and norms of behavior impact your interaction? If so, how?

- Did you and the other user(s) take on roles in the interaction? If so, what were they? How did they come to take them?

- Would you say the views and values of you and the other user(s) impacted your interaction? If so, how?

- Did you share similar information needs, wants, or desires with the other user(s)? Do you feel they behave similarly and partake in similar activities to you? Why or why not?

- Would you judge this interaction to have included users from multiple groups or communities? Why or why not?

- Did you build a common understanding during your interaction? How?

- Did you feel your interaction helped build a sense of community and commonality between you and this/these user(s)? How?

- Did you feel [LibraryThing / Goodreads] facilitated and supported this interaction? If so, how? Why or why not?

- Could this interaction have taken place in a different space? On a different site? Using different technology? Why or why not?

APPENDIX D

CODING SCHEME QUICK REFERENCE

General Rules

- The main unit of coding is **sentences**; codes should be applied at this level only.
  - As an exception to this rule, **no more than two** codes may be applied to an entire message, interview answer, or short interview exchange (≤ ½ page) if there is **clear evidence** for them **throughout** the message, answer, or exchange. A **memo or annotation** to explain such application is **strongly encouraged and recommended**.
  - With no exceptions, **codes may not be applied to smaller units of analysis than sentences**, and should be applied **separately** to more than one message, answer, or exchange.
- Apply **only the lowest level of coding**. In other words, do not code for coherence, boundary objects, convergence, or boundary object as standard; choose one or more characteristics / subcodes underneath them.
- **Memos and annotations are strongly encouraged and recommended** throughout to explain the following:
  - Cases where the **applicability** of a code is not to just one sentence within a message.
  - **Detailed reasons for coding** where deemed necessary
  - The **levels of social and information worlds** under consideration, especially when boundary-related codes are applied
  - The **distinction between existing and emergent**, seen along a **continuum** and as **emergent** from the research data; use memos and annotations to elaborate on where given cases fall on this continuum
  - **If in doubt, add an annotation!**

Existing Worlds

Translation

The process of reconciliation and translation of meanings between different people, social worlds, or information worlds.

Coherence

The degree of consistency between different translations and existing social or information worlds.
Code under one or more of the following characteristics / subcodes:

Social Norms

The common standards and sense of appropriate (right or wrong) behaviors, activities, and social appearances in a world.
Do not apply when substantial parts of thread or interview are socially normative; use an annotation instead.

Social Types

The ways in which individuals are both explicitly and implicitly perceived and defined—in terms of roles, status, and hierarchy—within the context of their world.

Information Value

A shared sense, explicit or implicit, of the relative scale of the importance—emotionally, spiritually, culturally, politically, and/or economically—of information and whether it is worth attention.
Do not apply when substantial parts of thread/interview express shared info values; use an annotation instead.

Information Behavior / Activities

Normative, chosen information behavior and information-based occupations or pursuits—defined broadly—by members of a world.
> *Note that such behavior must be normative at some level to be coded, and general occurrence of information behavior should not be coded.*

Organizations

Organized, but possibly temporary bodies with the particular purpose of furthering one aspect or another of the world's activities.

Boundary Object

Cross the boundaries between multiple existing social or information worlds and are used within and adapted to many of them simultaneously while maintaining a common identity across sites.
Code under one or more of the following characteristics / subcodes:

Sites

Spaces, positions, or locations—physical, virtual, or metaphorical—where information-related activities and behaviors take place.

Technologies / ICTs

Inherited or innovative processes, methods, techniques, equipment, or systems—developed from the practical application of knowledge—used for carrying out information or communication-related behaviors and activities.

Emergent Worlds

Convergence

The degree of consistency between different translations and emergent social or information worlds.

Code under one or more of the following characteristics / subcodes:

Social Norms   Social Types   Information Value! → See first page for how
Information Behavior / Activities   Organizations! ⌐ !!!!!!to code these

If it is unclear whether a new world—of any size or scale—has truly emerged, memos and annotations should be used to express the degree of confidence of this.

Boundary Object as Standard

Digital library as a new, local standard for a new, emergent social or information world.

Code under one or more of the following characteristics / subcodes:

Emergent Site

Digital library serving as an emergent, standard, and influential space, position, or location for information-related activities and behaviors.

Must be clear evidence of the digital library serving as a new standard site for an emergent world.

Emergent Technology / ICT

Digital library providing emergent and standard processes, methods, techniques, equipment, or systems—developed from the practical application of knowledge—used for carrying out information or communication-related behaviors and activities in an emergent world.

Must be clear evidence of the digital library providing or serving as a new standard technology within an emergent world.

Emergent Boundary Object

Digital library serves as an emergent, standard boundary object, but not as a site or technology.

*Must be clear evidence of digital library serving such a role. Must be clear that the digital library is not serving as a site or technology; such cases are expected to be rare, but this subcode is provided for completeness. **Cannot apply this alongside emergent site or emergent technology codes.***

APPENDIX E

APPROVALS FOR RESEARCH

E.1. Approval from LibraryThing

Date: Wed, 12 Sep 2012 11:36:44 -0400
Subject: Re: Requesting your support for an academic research study of LibraryThing
From: Jeremy Dibbell <[LibraryThing e-mail address]>
To: "Worrall, Adam" <[My FSU e-mail address]>

Okay - so, Tim's fine with this, so long as we can do it this way:

Once you've picked the five groups you're going to draw from, let me know and I'm going to post a note in their group indicating that you're going to be posting a message in the group and private-messaging several members, and that we've given you the okay to do this (otherwise it's very likely that you'll be flagged as a spammer, and we don't want that).

In your initial message to the group, you'll need to provide background on the study and/or some information about what you're studying, &c., so the members know what they're participating in (if you want to run that text by me first, that would be fine).

Let me know if this works, and if so you're good to go.
Best,
Jeremy

On Wed, Sep 12, 2012 at 10:12 AM, Worrall, Adam <[My FSU e-mail address]> wrote:
Thanks for the quick response and update! Looking forward to hearing further in the near future.

- Adam

On Sep 12 2012, at 9:47 am, Jeremy Dibbell <[LibraryThing e-mail address]>
 wrote:

> Hi Adam - it's on my list of things to discuss with Tim when he has a moment; will get back you as soon as I can.
> Best,
> Jeremy
>
> On Wed, Sep 12, 2012 at 9:40 AM, Worrall, Adam <[My FSU e-mail address]> wrote:
> Jeremy, have you heard anything further on my request? I am happy to answer any further questions and concerns you, Tim, or other LibraryThing staff may have. I'm also happy to make small changes (e.g. to the group selection process) if they are necessary to meet your approval. Thank you in advance for your time and response!
>
> Adam Worrall
> Doctoral Candidate, Florida State University

> School of Library and Information Studies
> College of Communication and Information - Florida's iSchool
> [My FSU e-mail address] | http://www.adamworrall.org
>
> On Sep 4 2012, at 1:53 pm, Adam Worrall <[My FSU e-mail address]> wrote:
>
> > Jeremy, my intention so far was to select them at random from your list of the 50 most active in the last week (http://www.librarything.com/groups/active), as of the day I begin my data collection for the first phase of content analysis. They'll remain constant throughout the study, but as of yet I haven't selected them from this list. If you or Tim think it might be an issue, I might be able to select the groups earlier in the process, although I can't begin collecting actual data without your consent and the approval of my dissertation committee and Florida State's Human Subjects Committee. Hope that helps explain things a bit better!
> >
> > Adam Worrall
> > Doctoral Candidate, Florida State University
> > School of Library and Information Studies
> > College of Communication and Information - Florida's iSchool
> > [My FSU e-mail address] | http://www.adamworrall.org
> >
> > On Sep 4 2012, at 1:33 pm, Jeremy Dibbell wrote:
> >
> >> What are the groups you're looking to include? I'm going to check in
> >> with Tim on this, and I'm sure he'll ask the groups.
> >> Thanks,
> >> Jeremy
> >>
> >> On Tue, Sep 4, 2012 at 11:18 AM, Worrall, Adam <[My FSU e-mail address]> wrote:
> >>> Jeremy, thank you for your response. I've done my best to answer your questions and concerns below.
> >>>
> >>> On Sep 4 2012, at 9:50 am, Jeremy Dibbell wrote:
> >>>
> >>>> Hi Adam - can you give me a sense of what you'd be asking, and of whom?
> >>>
> >>> I'm hoping to invite users of five LibraryThing groups to take part in an online survey. I would like to invite users who have recently posted messages in those groups via LibraryThing's private message feature, and invite other users and visitors to the groups by posting a general invitation letter and two follow-up reminders in the five groups.
> >>>
> >>> Those who decide they would like to take the survey will be asked about 20 questions, answering each using a five-point Likert agree-disagree scale. These questions will relate to their experience with and use of LibraryThing as an individual and as part of communities. These communities may be based in a common activity, occupation, interest, topic, location, or other common thread, and include the LibraryThing groups they frequent. The questions, drawing from theories of communities and digital libraries, will help gather data on the role LibraryThing

plays within, between, and across the communities that users are part of. There'll also be a few general demographic and usage questions at the end of the survey. The survey is online and should take invited users no more than 15-20 minutes to complete.

> >>>

> >>> I'll then directly contact a smaller selection of these users via e-mail for follow-up interviews, exploring the same topic but in a different form. Only users who, when they take the survey, express a willingness to take part in these and provide their e-mail address in order for me to contact them will be invited for interviews.

> >>>

> >>>> And just to be clear, LibraryThing doesn't actually offer digital books, but simply a cataloging environment ...

> >>>

> >>> Right, I realize that! In this case the content of your site, seen as a digital library, is the book data and metadata you source from libraries and Amazon, as well as user-contributed tags, favorites, collections, reviews, posts in discussions, and profile information. A digital library doesn't have to actually offer digitized books to qualify, under the definitions I'm using for my study.

> >>>

> >>> Hope that helps address your questions and concerns, Jeremy, and thank you again for considering my request!

> >>>

> >>> Adam Worrall

> >>> Doctoral Candidate, Florida State University

> >>> School of Library and Information Studies

> >>> College of Communication and Information - Florida's iSchool

> >>> [My FSU e-mail address] | http://www.adamworrall.org

> >>>

> >>>

> >>>> Best,

> >>>> Jeremy

> >>>>

> >>>> On Sun, Sep 2, 2012 at 9:23 PM, Worrall, Adam <[My FSU e-mail address]> wrote:

> >>>>> My name is Adam Worrall and I am a Doctoral Candidate at Florida State University's School of Library and Information Studies, working under the advisement of Associate Professor Dr. Michelle Kazmer. I am contacting you because I am interested in conducting an academic research study of LibraryThing as part of my dissertation, and would like to request your support before beginning the study.

> >>>>>

> >>>>> My proposed study will examine what I am calling "social digital libraries": sites like LibraryThing that offer digital content and services to users within social environments and contexts. It will focus on the role of social digital libraries within, between, and across the existing and emergent communities their users are part of. The study as proposed will consist of three phases:

> >>>>>

> >>>>> 1) Content analysis of messages posted in a selection of LibraryThing groups

> >>>>> 2) An online survey of users within these groups

283

> >>>>> 3) Interviews with a selection of users who completed the survey
> >>>>>
> >>>>> It is in the second phase, the survey, where I would appreciate your consent. I will be sending an invitation to the survey to the users who posted messages selected during the content analysis phase. These links will be sent via the private message feature of LibraryThing. I would also like to be able to post an invitation letter and two follow-up reminders to the message board of the selected groups, to attract a greater number of participants and provide a more representative view of your users, their interactions, and their communities. I will then contact prospective interviewees via e-mail later in the study. No further support should be required.
> >>>>>
> >>>>> This research will benefit you and LibraryThing in at least three ways:
> >>>>>
> >>>>> 1) It will help provide greater understanding of your users' collaborations, interactions, communities, and related behaviors and activities.
> >>>>> 2) It will offer implications and potential recommendations for the design and development of LibraryThing, other digital libraries, and other social Web sites and services.
> >>>>> 3) It will help to ensure social opportunities for your users to seek, use, and share information and knowledge are not diminished or lost as libraries become increasingly digital and hybrid in nature.
> >>>>>
> >>>>> Results, findings, and conclusions of the research can be shared with you when available and if you desire. Participants in the study, as users of LibraryThing, will also benefit from increased understanding of their behavior, interactions, and communities, which can be used to better serve them in the future.
> >>>>>
> >>>>> My study will be reviewed by the Florida State University Human Subjects Committee, an institutional review board (IRB), and will follow all ethical guidelines and procedures. Informed consent will be obtained from survey and interview participants, who will complete the study voluntarily and be able to withdraw at any time. No significant or permanent harm or risks, beyond those expected in everyday life, will come to users of LibraryThing as a result of their participation. The privacy and confidentiality of your users will be protected throughout the study. My identity and affiliation as the researcher, and that this is an independent study not connected with LibraryThing, will be made known to participants throughout the study.
> >>>>>
> >>>>> I would value and appreciate your support for completing this research study and towards the completion of my dissertation, should you be willing to grant it. If you have any questions or comments, you can respond to this e-mail, e-mail me directly at [My FSU e-mail address], or call me at [mobile phone number]. You may also e-mail my advisor, Dr. Michelle Kazmer, at [FSU e-mail address]. Thank you for taking the time to read and consider my request, and please let me know if you consent to my completion of this research study!
> >>>>>
> >>>>> Adam Worrall
> >>>>> Doctoral Candidate, Florida State University
> >>>>> School of Library and Information Studies
> >>>>> College of Communication and Information - Florida's iSchool
> >>>>> [My FSU e-mail address] | http://www.adamworrall.org

E.2. Approval from Goodreads

Date: Mon, 17 Sep 2012 10:04:02 -0700
Subject: Re: Status of my request re: academic research study of Goodreads
From: Patrick Brown <[Goodreads e-mail address]>
To: "Worrall, Adam" <[My FSU e-mail address]>

Hi Adam,

Thank for your reply. Yes, provided you're able to obtain consent from the group moderators and avoid direct messaging members, you have our consent to proceed. Good luck with your research.

Best,
Patrick

On Mon, Sep 17, 2012 at 9:30 AM, Worrall, Adam <[My FSU e-mail address]> wrote:
Patrick, thank you for your response and I apologize, in turn, for the delay in my response. I had to discuss the situation with my advisor and dissertation committee before coming to a decision, but after discussing with them I am willing to avoid direct messaging and to get the consent of the moderators of each Goodreads group I select to complete my study.

My intention is to select five groups randomly from the list you provide of those most recently popular (http://www.goodreads.com/group/recently_popular). I'll be able to select the groups and obtain consent from the moderators once my study is approved by the FSU Human Subjects Committee. I will, of course, randomly select new group(s) in the same fashion should any of the moderators not consent to letting me invite their group members to be part of the research.

Before I can submit to the Human Subjects Committee for approval, however, I need your consent to continue. If I do not direct message any users (other than moderators) and get the consent of moderators before posting an invite in their group inviting members of the group to participate, would you and Goodreads be willing to offer your consent for my completion of this research study? Thanks again for your time and response.

Adam Worrall
Doctoral Candidate, Florida State University
School of Library and Information Studies
College of Communication and Information - Florida's iSchool
[My FSU e-mail address] | http://www.adamworrall.org

On Sep 12 2012, at 2:49 pm, Patrick Brown <[Goodreads e-mail address]> wrote:

> Hi Adam,
>
> My apologies for the delay in responding. After looking over your proposal, I'm afraid we really can't allow any direct messaging of Goodreads members for this. Likewise, I would advise against joining groups and just posting about this. As a workaround, you can try messaging the

moderators of the groups you're interested in and asking if they'd be interested in helping you. If the moderator of the group feels it's appropriate, they can help you post about the study and possibly put you in touch with members willing to help.
>
> Do you have a sense of which groups you want to look at?
>
> Best,
> Patrick
>
> On Wed, Sep 12, 2012 at 6:34 AM, Worrall, Adam <[My FSU e-mail address]> wrote:
> Hi, my name is Adam Worrall and I am a Doctoral Candidate at Florida State University's School of Library and Information Studies, working under the advisement of Associate Professor Dr. Michelle Kazmer. I sent an e-mail to you on September 2nd under the subject line "Requesting your support for an academic research study of Goodreads," but have not received a response from you or anyone else at Goodreads. I am interested in conducting an academic research study of Goodreads as part of my dissertation, and would like to request your support before beginning the study. Can you please tell me if you got my e-mail and, if so, what the status of my request is? I am also happy to answer any and all questions and concerns you may have. Thank you in advance for your time and response!
>
> Adam Worrall
> Doctoral Candidate, Florida State University
> School of Library and Information Studies
> College of Communication and Information - Florida's iSchool
> [My FSU e-mail address] | http://www.adamworrall.org

Date:	Sun, 2 Sep 2012 21:25:06 -0400
Subject:	Requesting your support for an academic research study of Goodreads
From:	Adam Worrall <[My FSU e-mail address]>
To:	Patrick Brown <[Goodreads e-mail address]>
CC:	"Michelle M. Kazmer" <[FSU e-mail address]>

My name is Adam Worrall and I am a Doctoral Candidate at Florida State University's School of Library and Information Studies, working under the advisement of Associate Professor Dr. Michelle Kazmer. I am contacting you because I am interested in conducting an academic research study of Goodreads as part of my dissertation, and would like to request your support before beginning the study.

My proposed study will examine what I am calling "social digital libraries": sites like Goodreads that offer digital content and services to users within social environments and contexts. It will focus on the role of social digital libraries within, between, and across the existing and emergent communities their users are part of. The study as proposed will consist of three phases:

1) Content analysis of messages posted in a selection of Goodreads groups
2) An online survey of users within these groups
3) Interviews with a selection of users who completed the survey

It is in the second phase, the survey, where I would appreciate your consent. I will be sending an invitation to the survey to the users who posted messages selected during the content analysis phase. These links will be sent via the private message feature of Goodreads. I would also like to be able to post an invitation letter and two follow-up reminders to the message board of the selected groups, to attract a greater number of participants and provide a more representative view of your users, their interactions, and their communities. I will then contact prospective interviewees via e-mail later in the study. No further support should be required.

This research will benefit you and Goodreads in at least three ways:

1) It will help provide greater understanding of your users' collaborations, interactions, communities, and related behaviors and activities.
2) It will offer implications and potential recommendations for the design and development of Goodreads, other digital libraries, and other social Web sites and services.
3) It will help to ensure social opportunities for your users to seek, use, and share information and knowledge are not diminished or lost as libraries become increasingly digital and hybrid in nature.

Results, findings, and conclusions of the research can be shared with you when available and if you desire. Participants in the study, as users of Goodreads, will also benefit from increased understanding of their behavior, interactions, and communities, which can be used to better serve them in the future.

My study will be reviewed by the Florida State University Human Subjects Committee, an institutional review board (IRB), and will follow all ethical guidelines and procedures. Informed consent will be obtained from survey and interview participants, who will complete the study voluntarily and be able to withdraw at any time. No significant or permanent harm or risks, beyond those expected in everyday life, will come to users of Goodreads as a result of their participation. The privacy and confidentiality of your users will be protected throughout the study. My identity and affiliation as the researcher, and that this is an independent study not connected with Goodreads, will be made known to participants throughout the study.

I would value and appreciate your support for completing this research study and towards the completion of my dissertation, should you be willing to grant it. If you have any questions or comments, you can respond to this e-mail, e-mail me directly at [My FSU e-mail address], or call me at [mobile phone number]. You may also e-mail my advisor, Dr. Michelle Kazmer, at [FSU e-mail address]. Thank you for taking the time to read and consider my request, and please let me know if you consent to my completion of this research study!

Adam Worrall
Doctoral Candidate, Florida State University
School of Library and Information Studies
College of Communication and Information - Florida's iSchool
[My FSU e-mail address] | http://www.adamworrall.org

E.3. Approvals from Human Subjects Committee

E.3.1. Initial Approval

Florida State UNIVERSITY

Office of the Vice President for Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 10/22/2012

To: Adam Worrall

Address: 2100

Dept.:   INFORMATION STUDIES

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
    The Role of Digital Libraries as Boundary Objects Within and Across Social and Information Worlds

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 10/21/2013 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Michelle Kazmer   Advisor
HSC No. 2012.9157

E.3.2. Re-Approval

Florida State UNIVERSITY

Office of the Vice President For Research
Human Subjects Committee
P. O. Box 3062742
Tallahassee, Florida 32306-2742
 (850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 10/23/2013

To: Adam Worrall

Address: 2100

Dept.:   INFORMATION STUDIES

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research:
     The Role of Digital Libraries as Boundary Objects Within and Across Social and Information Worlds

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 10/22/2014   , you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chairman of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:
HSC No. 2013.11394

REFERENCES

About JCDL. (2012). In *Joint Conference on Digital Libraries*. Retrieved from http://www.jcdl.org/about.php

Ackerman, M. S. (1994). Providing social interaction in the digital library. In J. L. Shnase, J. L. Leggett, R. K. Furuta, & T. Metcalfe (Eds.), *Digital Libraries '94: Proceedings of the first annual conference on the theory and practice of digital libraries* (pp. 198–200). College Station, TX: Texas A&M University. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.48.2437&rep=rep1&type=pdf

Activity. (2014). *Oxford English Dictionary* [Online version]. Oxford, UK: Oxford University Press. Retrieved from http://www.oed.com/view/Entry/1958?redirectedFrom=activity#eid

Agre, P. E. (2003). Information and institutional change: The case of digital libraries. In A. P. Bishop, N. A. Van House, & B. P. Buttenfield (Eds.), *Digital library use: Social practice in design and evaluation* (pp. 219–240). Cambridge, MA: MIT Press.

Ahuvia, A. (2001). Traditional, interpretive, and reception based content analyses: Improving the ability of content analysis to address issues of pragmatic and theoretical concern. *Social Indicators Research*, *54*, 139–172. doi:10.1023/A:1011087813505

Akbar, M., Fan, W., Shaffer, C. A., Chen, Y., Cassel, L., Delcambre, L., … Fox, E. A. (2011). Digital library 2.0 for educational resources. In S. Gradmann, F. Borri, C. Meghini, & H. Schuldt (Eds.), *Lecture Notes in Computer Science: Vol. 6966. Research and Advanced Technology for Digital Libraries: Proceedings of the 2011 International Conference on Theory and Practice of Digital Libraries, TPDL 2011* (pp. 89–100), Berlin, Germany, September 26-28, 2011. Berlin, Germany: Springer-Verlag.

Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research*, *81*, 132–169. doi:10.3102/0034654311404435

Alemu, G., Stevens, B., & Ross, P. (2012). Towards a conceptual framework for user-driven semantic metadata interoperability in digital libraries: A social constructivist approach. *New Library World, 113*(1/2), 38–54. doi:10.1108/03074801211199031

Amin, A., & Roberts, J. (2008). Knowing in action: Beyond communities of practice. *Research Policy*, *37*, 353–369. doi:10.1016/j.respol.2007.11.003

Answerbag. (2009). *Answerbag* [Archived version]. Retrieved from http://web.archive.org/web/20091027222926/http://www.answerbag.com/

Ardichvili, A. (2008). Learning and knowledge sharing in virtual communities of practice: Motivators, barriers, and enablers. *Advances in Developing Human Resources, 10*, 541–554. doi:10.1177/1523422308319536

Ardichvili, A., Page, V., & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management, 7*, 64–77. doi:10.1108/13673270310463626

Arko, R. A., Ginger, K. M., Kastens, K. A., & Weatherley, J. (2006). Using annotations to add value to a digital library for education. *D-Lib Magazine*, *12*(5). doi:10.1045/may2006-arko

Arms, W. (2000). *Digital libraries*. Cambridge, MA: MIT Press.

AuYeung, C., Dalton, S., & Gornall, S. (2007). Book Buzz: Online 24/7: Virtual reading clubs and what we've learned about them. *Partnership: The Canadian Journal of Library and Information Practice and Research, 2*(2). Retrieved from http://www.criticalimprov.com/index.php/perj/article/view/237

Babbie, E. (2007). *The practice of social research* (11th ed.). Belmont, CA: Thomson Wadsworth.

Bannon, L. J. (1997). Dwelling in the "great divide": The case for HCI and CSCW. In G. C. Bowker, S. L. Star, W. Turner, & L. Gasser (Eds.), *Social science, technical systems, and cooperative work: Beyond the great divide* (pp. 355–377). Mahwah, NJ: Lawrence Erlbaum Associates.

Bauer, M. W., & Aarts, B. (2000). Corpus construction: A principle for qualitative data collection. In M. W. Bauer & G. Gaskell (Eds.), *Qualitative researching with text, image and sound* (pp. 19–37). London, UK: Sage.

Bearman, D. A. (2007). Digital libraries. *Annual Review of Information Science and Technology*, *41*, 223–272. doi:10.1002/aris.2007.1440410112

Bearman, D. A., & Trant, J. (2005). Social terminology enhancement through vernacular engagement: Exploring collaborative annotation to encourage interaction with museum collections. *D-Lib Magazine*, *11*(9). doi:10.1045/september2005-bearman

Bechky, B. A. (2003). Sharing meaning across occupational communities: The transformation of understanding on a production floor. *Organization Science*, *14*, 312–330.

Becker, H. S. (1999). The Chicago School, so-called. *Qualitative Sociology*, *22*, 3–12. doi:10.1023/A:1022107414846

Bieber, M., Engelbart, D., Furuta, R., Hiltz, S. R., Noll, J., Preece, J., . . ., Van de Walle, B. (2002). Toward virtual community knowledge evolution. *Journal of Management Information Systems*, *18*, 11–35.

Bishop, A. P. (1999). Making digital libraries go: Comparing use across genres. In E. A. Fox & N. Rowe (Eds.), *Proceedings of the fourth ACM conference on digital libraries* (pp. 94–103). New York, NY: ACM. doi:10.1145/313238.313267

Bishop, A. P., Neumann, L. J., Star, S. L., Merkel, C., Ignacio, E., & Sandusky, R. J. (2000). Digital libraries: Situating use in changing information infrastructure. *Journal of the American Society for Information Science*, *51*, 394–413. doi:10.1002/(SICI)1097-4571(2000)51:4<394::AID-ASI8>3.0.CO;2-Q

Bødker, S., & Christiansen, E. (1997). Scenarios as springboards in CSCW design. In G. C. Bowker, S. L. Star, W. Turner, & L. Gasser (Eds.), *Social science, technical systems, and cooperative work: Beyond the great divide* (pp. 217–233). Mahwah, NJ: Lawrence Erlbaum Associates.

Borgman, C. L. (1999). What are digital libraries? Competing visions. *Information Processing and Management*, *35*, 227–243. doi:10.1016/S0306-4573(98)00059-4

Bowker, G. C., & Star, S. L. (1999). *Sorting things out: Classification and its consequences*. Cambridge, MA: MIT Press.

boyd, D. (2014). Identity: Why do teens seem strange online? In *It's complicated: The social lives of networked teens* (pp. 54-76). New Haven, CT: Yale University Press.

Brill, J. E. (2008). Likert scale. In *Encyclopedia of survey research methods* (vol. 1, pp. 427-429). Thousand Oaks, CA: Sage.

Brown, J. S., & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization Science*, *2*, 40–57.

Brown, J. S., & Duguid, P. (1996). The social life of documents. *First Monday*, *1*(1). Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/466/387

Brown, J. S., & Duguid, P. (1998). Organizing knowledge. *California Management Review*, *40*, 90–111.

Brown, J. S., & Duguid, P. (2001). Knowledge and organization: A social-practice perspective. *Organization Science*, *12*, 198–213.

Brown, J. S., & Duguid, P. (2002). *The social life of information* (2nd ed.). Boston, MA: Harvard Business School Press.

Brusilovsky, P., Cassel, L. N., Delcambre, L. M. L., Fox, E. A., Furuta, R., Garcia, D. D., … Yudelson, M. (2010). Social navigation for educational digital libraries. *Procedia Computer Science, 1*(2), 2889–2897. doi:10.1016/S1877-0509(10)00330-3

Buckland, M. K. (1991). Information as thing. *Journal of the American Society for Information Science, 42*, 351–360. doi:10.1002/(SICI)1097-4571(199106)42:5<351::AID-ASI5>3.0.CO;2-3

Burnett, G., Besant, M., & Chatman, E. A. (2001). Small worlds: Normative behavior in virtual communities and feminist bookselling. *Journal of the American Society for Information Science and Technology*, *52*, 536–547. doi:10.1002/asi.1102

Burnett, G., Burnett, K., Kazmer, M. M., Marty, P. F., Worrall, A., Knop, B., Hinnant, C. C., Stvilia, B., & Wu, S. (2014). Don't tap on the glass, you'll anger the fish! The information worlds of distributed scientific teams. In P. Fichman & H. Rosenbaum (Eds.), Social informatics: Past, present, and future (pp. 118–134). Newcastle, UK: Cambridge Scholars Publishing.

Burnett, G., & Buerkle, H. (2004). Information exchange in virtual communities: A comparative study. *Journal of Computer-Mediated Communication, 9*(2). Retrieved from http://jcmc.indiana.edu/vol9/issue2/burnett.html

Burnett, G., Dickey, M. H., Kazmer, M. M., & Chudoba, K. M. (2003). Inscription and interpretation of text: A cultural hermeneutic examination of virtual community. *Information Research*, *9*(1). Retrieved from http://informationr.net/ir/9-1/paper162.html

Burnett, G., & Jaeger, P. T. (2008). Small worlds, lifeworlds, and information: The ramifications of the information behaviour of social groups in public policy and the public sphere. *Information Research*, *13*(2). Retrieved from http://informationr.net/ir/13-2/paper346.html

Burnett, K., Burnett, G., Kazmer, M. M., & Hinnant, C. C. (2012). *Exploring the interaction between team and data lifecycles to promote long-term innovative programs of research* (Unpublished NSF VOSS grant proposal). Tallahassee, FL: Florida State University.

Burnett, K., Burnett, G., Kazmer, M. M., Stvilia, B., Marty, P. F., & Hinnant, C. C. (2009). *VOSS: Virtual scientific teams: Life-cycle formation and long-term scientific collaboration* (Funded NSF grant proposal, Award No. 0942855). Tallahassee, FL: Florida State University. Retrieved from http://voss.cci.fsu.edu/wp-content/uploads/ 2010/01/voss-proposal.pdf

Burnett, K., Subramaniam, M. M., & Gibson, A. N. (2009). Latinas cross the IT border: Understanding gender as a boundary object between information worlds. *First Monday*, *14*(9). Retrieved from http://ojphi.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/ viewArticle/2581/2286

Bush, V. (1945). As we may think. *The Atlantic Monthly*, *176*, 101–108.

Butterfield, L. D., Borgen, W. A., Amundson, N. E., & Maglio, A.-S. T. (2005). Fifty years of the critical incident technique: 1954-2004 and beyond. *Qualitative Research*, *5*, 475-497. doi:10.1177/1468794105056924

Candela, L., Castelli, D., Pagano, P., Thanos, C., Ioannidis, Y., Koutrika, G., . . . , Schuldt, H. (2007). Setting the foundations of digital libraries: The DELOS manifesto. *D-Lib Magazine*, *13*(3/4). Retrieved from http://www.dlib.org/dlib/march07/castelli/ 03castelli.html

Candela, L., & Straccia, U. (2003). The personalized, collaborative digital library environment CYCLADES and its collections management. In J. Callan, F. Crestani, & M. Sanderson (Eds.), *Lecture Notes in Computer Science: Vol. 2924. Distributed Multimedia Information Retrieval* (pp. 156–172). Berlin, Germany: Springer-Verlag.

Carlile, P. R. (2002). A pragmatic view of knowledge and boundaries: Boundary objects in new product development. *Organization Science*, *13*, 442–455.

Carlile, P. R. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, *15*, 555–568.

Case, D. O. (2012). *Looking for information: A survey of research on information seeking, needs, and behavior* (3rd ed.). Bingley, UK: Emerald.

Chanal, V., & Kimble, C. (2010). *Born to be wild: Using communities of practice as a tool for knowledge management*. Paper presented at Ethicomp 2010: The "backwards, forwards and sideways" changes of ICT, Tarragona, Spain. Retrieved from http://arxiv.org/abs/1004.4909

Chandler, O. (2012). Goodreads transitions to new data sources. *Goodreads blog*. Retrieved from http://www.goodreads.com/blog/show/338-goodreads-transitions-to-new-data-sources

Chandler, O. (2013). Exciting news about Goodreads: We're joining the Amazon family! *Goodreads blog*. Retrieved from http://www.goodreads.com/blog/show/413-exciting-news-about-goodreads-we-re-joining-the-amazon-family

Chang, H.-C. (2009). Emotion barometer of reading: User interface design of a social cataloging website. In D. R. Olsen, Jr. (Chair), *CHI '09 Extended Abstracts on Human Factors in Computing Systems* (pp. 3371–3376), Boston, MA, April 4-9, 2009. New York, NY: ACM. doi:10.1145/1520340.1520488

Charmaz, K. (2006). Coding in grounded theory practice. In *Constructing grounded theory: A practical guide through qualitative analysis* (pp. 42–71). Thousand Oaks, CA: Sage.

Chatman, E. A. (1983). *The diffusion of information among the working poor* (Doctoral dissertation). University of California, Berkeley, Berkeley, CA. Retrieved from ProQuest Dissertations and Theses. (8328818)

Chatman, E. A. (1987). The information world of low-skilled workers. *Library and Information Science Research*, *9*, 265–283.

Chatman, E. A. (1991). Life in a small world: Applicability of gratification theory to information‑seeking behavior. *Journal of the American Society for Information Science*, *42*, 438–449. doi:10.1002/(SICI)1097-4571(199107)42:6<438::AID-ASI6>3.0.CO;2-B

Chatman, E. A. (1992). *The information world of retired women*. New York, NY: Greenwood Press.

Chatman, E. A. (1996). The impoverished life-world of outsiders. *Journal of the American Society for Information Science*, *47*, 193–206. doi:10.1002/(SICI)1097-4571(199603)47:3<193::AID-ASI3>3.0.CO;2-T

Chatman, E. A. (1999). A theory of life in the round. *Journal of the American Society for Information Science*, *50*, 207–217. doi:10.1002/(SICI)1097-4571(1999)50:3<207::AID-ASI3>3.0.CO;2-8

Chatman, E. A. (2000). Framing social life in theory and research. *The New Review of Information Behavior Research*, *1*, 3–17.

Chiu, C.-M., Hsu, M.-H., & Wang, E. T. G. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems, 42*, 1872–1888. doi:10.1016/j.dss.2006.04.001

Chu, S. K.-W. (2008). TWiki for knowledge building and management. *Online Information Review*, *32*, 745–758. doi:10.1108/14684520810923917

Clarke, A. E. (2010). In memoriam: Susan Leigh Star (1954-2010). *Science, Technology & Human Values*, *35*, 581-600. doi:10.1177/0162243910378096

Clarke, A. E., & Star, S. L. (2008). The social worlds framework: A theory/methods package. In E. Hackett (Ed.), *Handbook of science and technology studies* (pp. 113–137). Cambridge, MA: MIT Press.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, *20*, 37–46. doi:10.1177/001316446002000104

Compete, Inc. (2014). *answerbag.com: 1,203,691 UVs for April 2014: Compete*. Retrieved from https://siteanalytics.compete.com/answerbag.com#.U4-67141Y0o

Counts, S., & Fisher, K. E. (2010). Mobile social networking as information ground: A case study. *Library and Information Science Research, 32*, 98–115. doi:10.1016/j.lisr.2009.10.003

Courtright, C. (2008). Context in information behavior research. *Annual Review of Information Science and Technology*, *41*, 273–306. doi:10.1002/aris.2007.1440410113

Cox, A. (2005). What are communities of practice? A comparative review of four seminal works. *Journal of Information Science*, *31*, 527–540. doi:10.1177/0165551505057016

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Thousand Oaks, CA: Sage.

CYCLADES. (n.d.). *CYCLADES: An open collaborative virtual archive environment*. Retrieved from http://www.ercim.eu/cyclades/

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, *32*, 554–571.

Davenport, T. H., & Prusak, L. (2000). *Working knowledge: How organizations manage what they know* (Paperback edition). Boston, MA: Harvard Business School Press.

Dawes, J. (2008). Do data characteristics change according to the number of scale points used? *International Journal of Market Research*, *50*, 61–77.

Dervin, B. (1977). Useful theory for librarianship: Communication, not information. *Drexel Library Quarterly, 13*(3), 16–32.

Duggan, M., & Smith, A. (2013). *Social media update 2013* [Report]. Washington, DC: Pew Research Center. Retrieved from http://www.pewinternet.org/2013/12/30/social-media-update-2013/

Duguid, P. (2005). The art of knowing: Social and tacit dimensions of knowledge and the limits of the community of practice. *The Information Society*, *21*, 109–118. doi:10.1080/01972240590925311

Duguid, P. (2008). Community of practice then and now. In A. Amin & J. Roberts (Eds.), *Community, economic creativity, and organization* (pp. 1–10). Oxford, UK: Oxford University Press.

Edwards, P., Bowker, G., Jackson, S., & Williams, R. (2009). An agenda for infrastructure studies. *Journal of the Association for Information Systems, 10*(5). Retrieved from http://aisel.aisnet.org/jais/vol10/iss5/6

Ellis, D. (1992). The physical and cognitive paradigms in information retrieval research. *Journal of Documentation*, *48*, 45–64. doi:10.1108/eb026889

Ellis, D., Oldridge, R., & Vasconcelos, A. (2004). Community and virtual community. *Annual Review of Information Science and Technology*, *38*, 145–186. doi:10.1002/aris.1440380104

Elsayed, A. M. (2010). Arab online book clubs: A survey. *IFLA Journal, 36*, 235–250. doi:10.1177/0340035210378864

Erdelez, S. (2005). Information encountering. In K. E. Fisher, S. Erdelez, & L. McKechnie (Eds.), *Theories of information behavior* (pp. 179–184). Medford, NJ: Information Today.

Farooq, U., Ganoe, C. H., Carroll, J. M., & Giles, C. L. (2009). Designing for e-science: Requirements gathering for collaboration in CiteSeer. *International Journal of Human-Computer Studies*, *67*, 297–312. doi:10.1016/j.ijhcs.2007.10.005

Farrell, S., Lau, T., & Nusser, S. (2009). Building communities with people-tags. In C. Baranauskas, P. Palanque, J. Abascal, & S. D. J. Barbosa (Eds.), *Lecture Notes in Computer Science: Volume 4663. Human-Computer Interaction - INTERACT 2007* (pp. 357–360). Berlin, Germany: Springer-Verlag. doi:10.1007/978-3-540-74800-7

Fidel, R. (1984). The case study method: A case study. *Library and Information Science Research*, *6*, 273–288.

Fischer, C. S. (1975). Toward a subcultural theory of urbanism. *American Journal of Sociology*, *80*, 1319–1341.

Fisher, K. E., Durrance, J. C., & Hinton, M. B. (2004). Information grounds and the use of need-based services by immigrants in Queens, New York: A context-based, outcome evaluation approach. *Journal of the American Society for Information Science and Technology, 55*, 754–766. doi:10.1002/asi.20019

Fisher, K. E., & Julien, H. (2009). Information behavior. *Annual Review of Information Science and Technology, 43*, 317-358. doi:10.1002/aris.2009.1440430114

Fisher, S., & Oulton, T. (1999). The critical incident technique in library and information management research. *Education for Information*, *17*, 113–125.

Fister, B. (2005). "Reading as a contact sport": Online book groups and the social dimensions of reading. *Reference and User Services Quarterly, 44*, 303–309.

Flanagan, J. C. (1954). The critical incident technique. *Psychological Bulletin*, *51*, 327–358.

Fleischmann, K. R. (2007a). Digital libraries and human values: Human‐computer interaction meets social informatics. In A. Grove (Ed.), *Proceedings of the 70th ASIS&T Annual Meeting: Joining research and practice: Social computing and information science*. Silver Spring, MD: American Society for Information Science and Technology. doi:10.1002/meet.1450440229

Fleischmann, K. R. (2007b). Digital libraries with embedded values: Combining insights from LIS and science and technology studies. *Library Quarterly*, *77*, 409–427. doi:10.1086/520997

Fleischmann, K. R. (2014). Social informatics, human values, and ICT design. In P. Fichman & H. Rosenbaum (Eds.), *Social informatics: Past, present, and future* (pp. 75–91). Newcastle, UK: Cambridge Scholars Publishing.

Fleiss, J. L. (1981). *Statistical methods for rates and proportions* (2nd ed.). New York, NY: Wiley.

Foasberg, N. M. (2012). Online reading communities: From book clubs to book blogs. *The Journal of Social Media in Society*, 1(1). Retrieved from http://www.thejsms.org/tsmri/index.php/TSMRI/article/view/3

Forsythe, D. E. (2001). Ethics and politics of studying up in technoscience. In *Studying those who study us: An anthropologist in the world of artificial intelligence* (pp. 119–131). Stanford, CA: Stanford University Press.

Foster, A., & Ford, N. (2003). Serendipity and information seeking: An empirical study. *Journal of Documentation*, *59*, 321–340. doi:10.1108/00220410310472518

Fowler, F. J. (2002). *Survey research methods* (3rd ed.). Thousand Oaks, CA: Sage.

Fox, E. A. (1999). The 5S framework for digital libraries and two case studies: NDLTD and CSTC. In C. Chen (Ed.), *Information technology and global library development: Proceedings of NIT '99*. West Newton, MA: Microuse Information. Retrieved from http://web.archive.org/web/20061026125725/http://www.ndltd.org/pubs/nit99fox.doc

Fox, E. A., & Gonçalves, M. A. (2009). *5S framework for digital libraries*. Retrieved from http://www.dlib.vt.edu/projects/5S-Model/

Fox, Edward A., & Urs, S. R. (2002). Digital libraries. *Annual Review of Information Science and Technology*, *36*, 502–589. doi:10.1002/aris.1440360113

Fox, S. (2000). Communities of practice, Foucault and actor‑network theory. *Journal of Management Studies*, *37*, 853–868. doi:10.1111/1467-6486.00207

Freeman, L. C. (2004). *The development of social network analysis: A study in the sociology of science*. Vancouver, BC, Canada: Empirical Press.

Frommholz, I., Brocks, H., Thiel, U., Neuhold, E., Iannone, L., Semeraro, G., . . ., Ceci, M. (2003). Document-centered collaboration for scholars in the humanities: The COLLATE system. In T. Koch & I. T. Sølvberg (Eds.), *Lecture Notes in Computer Science: Vol. 2769. Research and Advanced Technology for Digital Libraries* (pp. 434–445). Berlin, Germany: Springer-Verlag. doi:10.1007/b11967

Frost, J. H., & Massagli, M. P. (2008). Social uses of personal health information within PatientsLikeMe, an online patient community: What can happen when patients have access to one another's data. *Journal of Medical Internet Research*, *10*(3). doi:10.2196/jmir.1053

Frumkin, J. (2004). Defining digital libraries. *OCLC Systems and Services*, *20*, 155–156. doi:10.1108/10650750410564637

Frumkin, J. (2005). The Wiki and the digital library. *OCLC Systems & Services, 21*, 18–22. doi:10.1108/10650750510578109

Fujimura, J. H. (1992). Crafting science: Standardized packages, boundary objects, and "translation." In A. Pickering (Ed.), *Science as practice and culture* (pp. 168–211). Chicago, IL: University of Chicago Press.

Fulton, C. (2010). An ordinary life in the round: Elfreda Annmary Chatman. *Libraries and the Cultural Record*, *45*, 238–259. doi:10.1353/lac.0.0122

Gal, U., Yoo, Y., & Boland, R. J. (2004). The dynamics of boundary objects, social infrastructures and social identities. *Sprouts: Working Papers on Information Systems*, *4*, 193–206. Retrieved from http://sprouts.aisnet.org/4-11

García-Crespo, Á., Gómez-Berbís, J. M., Colomo-Palacios, R., & García-Sánchez, F. (2011). Digital libraries and Web 3.0: The CallimachusDL approach. *Computers in Human Behavior, 27*, 1424–1430. doi:10.1016/j.chb.2010.07.046

Garton, L., Haythornthwaite, C., & Wellman, B. (1997). Studying online social networks. *Journal of Computer-Mediated Communication*, *3*(1). Retrieved from http://jcmc.indiana.edu/vol3/issue1/garton.html

Gaskell, G., & Bauer, M. W. (2000). Towards public accountability: Beyond sampling, reliability, and validity. In M. W. Bauer & G. Gaskell (Eds.), *Qualitative researching with text, image and sound* (pp. 336–350). London, UK: Sage.

Gazan, R. (2008). Social annotations in digital library collections. *D-Lib Magazine*, *14*(11/12). doi:10.1045/november2008-gazan

Geertz, C. (1973). Thick description: Toward an interpretive theory of culture. In *The interpretation of cultures: Selected essays* (pp. 3–30). New York, NY: Basic Books.

George, D., & Mallery, P. (2010). Reliability analysis. In *SPSS for Windows step by step: A simple guide and reference: 17.0 update* (10th ed., pp. 221–232). Boston, MA: Allyn and Bacon.

Gibson, A. N. (2011). Community, place and information behavior: A case study of parents of children with Down Syndrome and government sponsored information and services. In P. J. McKenzie, C. Johnson, & S. Stevenson (Eds.), *Proceedings of the 2011 Canadian Association for Information Science conference: Exploring interactions of people, places and information*. New Brunswick, NS, Canada: Canadian Association for Information Science. Retrieved from http://www.cais-acsi.ca/proceedings/2011/71_Gibson.pdf

Gibson, A. N. (2013). *The influence of place-based communities on information behavior: A comparative grounded theory analysis* (Doctoral dissertation). Florida State University, Tallahassee, FL. Retrieved from ProQuest Dissertations and Theses. (3612416)

Glazier, J. D., & Grover, R. (2002). A multidisciplinary framework for theory building. *Library Trends*, *50*, 317–329.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, *8*, 597–607.

Gonçalves, M. A., Fox, E. A., Watson, L. T., & Kipp, N. A. (2004). Streams, structures, spaces, scenarios, societies (5S): A formal model for digital libraries. *ACM Transactions on Information Systems*, *22*, 270–312. doi:10.1145/984321.984325

Gooden, R. J., & Winefield, H. R. (2007). Breast and prostate cancer online discussion boards: A thematic analysis of gender differences and similarities. *Journal of Health Psychology*, *12*, 103-114. doi:10.1177/1359105307071744

Goodreads. (2014a). About Goodreads. In *Goodreads: Book reviews, recommendations, and discussion*. Retrieved from http://www.goodreads.com/about/us

Goodreads. (2014b). How it works. In *Goodreads: Book reviews, recommendations, and discussion*. Retrieved from http://www.goodreads.com/about/how_it_works

Goodreads. (2014c). Librarian manual. In *Goodreads: Book reviews, recommendations, and discussion*. Retrieved from http://www.goodreads.com/librarian_manual

Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco, CA: Jossey-Bass.

Greene, D. T. (2012). *Reading as a communal practice: Examining the reading engagements, identity constructions, and social factors present in an online book club*. Paper presented at the 2012 Association for Library and Information Science Education (ALISE) Annual Conference, Dallas, TX, January 17-20, 2012.

Grover, R., & Glazier, J. D. (1986). A conceptual framework for theory building in library and information science. *Library and Information Science Research*, *8*, 227–242.

Gunawardena, S., Weber, R., & Agosto, D. E. (2010). Finding that special someone: Interdisciplinary collaboration in an academic context. *Journal of Education for Library and Information Science*, *51*, 210–221.

Handley, K., Sturdy, A., Fincham, R., & Clark, T. (2006). Within and beyond communities of practice: Making sense of learning through participation, identity and practice. *Journal of Management Studies*, *43*, 641–653. doi:10.1111/j.1467-6486.2006.00605.x

Hank, C., Jordan, M. W., & Wildemuth, B. M. (2009). Survey research. In B. M. Wildemuth (Ed.), *Applications of social research methods to questions in information and library science* (pp. 256–269). Westport, CT: Libraries Unlimited.

Hansen, P., & Järvelin, K. (2005). Collaborative information retrieval in an information-intensive domain. *Information Processing and Management*, *41*, 1101–1119. doi:10.1016/j.ipm.2004.04.016

Hara, N., & Fichman, P. (2014). Frameworks for understanding knowledge sharing in open online communities: Boundaries and boundary crossing. In P. Fichman & H. Rosenbaum (Eds.), *Social informatics: Past, present, and future* (pp. 92–104). Newcastle, UK: Cambridge Scholars Publishing.

Haythornthwaite, C. (2006). Articulating divides in distributed knowledge practice. *Information, Communication, and Society, 9*, 761-780. doi:10.1080/13691180601064113

Haythornthwaite, C. (2007). Social networks and online community. In A. Joinson, K. McKenna, T. Postmes, & U.-D. Reips (Eds.), *The Oxford handbook of Internet psychology* (pp. 121–137). New York, NY: Oxford University Press.

Henderson, K. (1991). Flexible sketches and inflexible data bases: Visual communication, conscription devices, and boundary objects in design engineering. *Science, Technology, and Human Values*, *16*, 448–473. doi:10.1177/016224399101600402

Hillery, G. A. (1955). Definitions of community: Areas of agreement. *Rural Sociology*, *20*, 111–123.

Hislop, D. (2004). The paradox of communities of practice: Knowledge sharing between communities. In P. Hildreth & C. Kimble (Eds.), *Knowledge networks innovation through communities of practice* (pp. 36–45). Hershey, PA: Idea Publishing.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities*. Reading, MA: Addison-Wesley.

Horton, K., Davenport, E., & Wood-Harper, T. (2005). Exploring sociotechnical interaction with Rob Kling: Five "big" ideas. *Information Technology and People*, *18*, 50–67. doi:10.1108/09593840510584621

Hughes, J. (2007). Lost in translation: Communities of practice: The journey from academic model to practitioner tool. In J. Hughes, N. Jewson, & L. Unwin (Eds.), *Communities of practice: Critical perspectives* (pp. 30–40). New York, NY: Routledge.

Institute for Information Systems and Computer Media. (n.d.). *Research Activities at the IICM*. Retrieved from http://www.iicm.tugraz.at/research

International Federation of Library Associations and Institutions. (2009). *Functional Requirements for Bibliographic Records: Final report.* The Hague, Netherlands: Author. Retrieved from http://www.ifla.org/files/cataloguing/frbr/frbr_2008.pdf

Jack, & Finley, E. (2013). Recently popular groups not working [discussion thread]. In *Goodreads feedback discussion*. from https://www.goodreads.com/topic/show/1266163-recently-popular-groups-not-working

Jaeger, P. T., & Burnett, G. (2010). *Information worlds: Behavior, technology, and social context in the age of the Internet*. New York, NY: Routledge.

Jones, S. G. (1995). Understanding community in the information age. In S. G. Jones (Ed.), *CyberSociety: Computer-mediated communication and community* (pp. 10–35). Thousand Oaks, CA: Sage.

Kahn, R. E., & Cerf, V. G. (1988). *The Digital Library Project: Volume 1: The world of knowbots*. Reston, VA: Corporation for National Research Initiatives. Retrieved from doi:4263537/2091

Kazmer, M. M., & Haythornthwaite, C. (2001). Juggling multiple social worlds: Distance students online and offline. *American Behavioral Scientist*, *45*, 510–529. doi:10.1177/00027640121957196

Kazmer, M.M., Lustria, M. L. A., Cortese, J., Burnett, G., Kim, J.-H., Ma, J., & Frost, J. (2014). Distributed knowledge in an online patient support community: Authority and discovery. *Journal of the Association for Information Science and Technology, 65*, 1319-1334. doi:10.1002/asi.23064

Kazmer, M. M., & Xie, B. (2008). Qualitative interviewing in Internet studies: Playing with the media, playing with the method. *Information, Communication and Society*, *11*, 257–278. doi:10.1080/13691180801946333

Kiernan, A. (2011). The growth of reading groups as a feminine leisure pursuit: Cultural democracy or dumbing down? In D. Rehberg Sedo (Ed.), *Reading communities from salons to cyberspace* (pp. 123-139). New York, NY: Palgrave Macmillan.

Kimble, C., Grenier, C., & Goglio-Primard, K. (2010). Innovation and knowledge sharing across professional boundaries: Political interplay between boundary objects and brokers. *International Journal of Information Management*, *30*, 437–444. doi:10.1016/j.ijinfomgt.2010.02.002

Kimble, C., & Hildreth, P. (2005). Dualities, distributed communities of practice and knowledge management. *Journal of Knowledge Management*, *9*, 102–113. doi:10.1108/13673270510610369

Kling, R. (1999). What is social informatics and why does it matter? *D-Lib Magazine*, *5*(1). doi:10.1045/january99-kling

Koepfler, J. A., & Fleischmann, K. R. (2011). Classifying values in informal communication: Adapting the meta-inventory of human values for tweets. In A. Grove (Ed.), *Proceedings of the 74th ASIS&T Annual Meeting: Communication and information in society, technology and work*, New Orleans, LA, October 9-12, 2011. Silver Spring, MD: American Society for Information Science and Technology. doi:10.1002/meet.2011.14504801116

Koepfler, J. A., & Fleischmann, K. R. (2012). Studying the values of hard-to-reach populations: Content analysis of tweets by the 21st century homeless. In J.-E. Mai (Chair), *iConference 2012 proceedings* (pp. 48–55), Toronto, Canada, February 7-10, 2012. New York, NY: ACM. doi:10.1145/2132176.2132183

Kolbitsch, J., & Maurer, H. (2006a). The transformation of the Web: How emerging communities shape the information we consume. *Journal of Universal Computer Science*, *12*(2). doi:10.3217/jucs-012-02-0187

Kolbitsch, J., & Maurer, H. (2006b). Community building around encyclopaedic knowledge. *Journal of Computing and Information Technology*, *14*, 175–190. doi:10.2498/cit.2006.03.01

Kolbitsch, J., Safran, C., & Maurer, H. (2007). Dynamic adaptation of content and structure in electronic encyclopaedias. *Journal of Digital Information*, *8*(3). Retrieved from http://journals.tdl.org/jodi/article/viewArticle/237/191

Kraut, R., Wang, X., Butler, B., Joyce, E., & Burke, M. (2008). *Beyond information: Developing the relationship between the individual and the group in online communities*. Retrieved from http://www.cs.cmu.edu/~kraut/RKraut.site.files/articles/wang08-isr-relationship-rev2-submitted.pdf

Krippendorff, K. (2004a). Conceptual foundation. In *Content analysis: An introduction to its methodology* (2nd ed., pp. 18–43). Thousand Oaks, CA: Sage.

Krippendorff, K. (2004b). Reliability. In *Content analysis: An introduction to its methodology* (2nd ed., pp. 211–256). Thousand Oaks, CA: Sage.

Krowne, A. (2003). Building a digital library the commons-based peer production way. *D-Lib Magazine*, *9*(10). doi:10.1045/october2003-krowne

Kvale, S., & Brinkmann, S. (2009). *InterViews: Learning the craft of qualitative research interviewing* (2nd ed.). Thousand Oaks, CA: Sage.

Landbeck, C. R. (2013). *The description and indexing of editorial cartoons: An exploratory study* (Doctoral dissertation). Florida State University, Tallahassee, FL. Retrieved from ProQuest Dissertations and Theses. (3564911)

Landis, J. R., & Joch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159-174. doi:10.2307/2529310

Lankes, R. D. (2009). Participatory librarianship and digital libraries [Video file]. In *R. David Lankes presents New Librarianship: blip.tv*. Retrieved from http://blip.tv/r-david-lankes-presents-new-librarianship/participatory-librarianship-and-digital-libraries-1692129

Lankes, R. D. (2011). *The atlas of new librarianship*. Cambridge, MA: MIT Press.

Latour, B. (2005). *Reassembling the social: An introduction to actor-network theory*. New York, NY: Oxford University Press.

Lave, J. (2008). Situated learning and changing practice. In A. Amin & J. Roberts (Eds.), *Community, economic creativity, and organization* (pp. 283–296). Oxford, UK: Oxford University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

Lee, A. S. (1994). Electronic mail as a medium for rich communication: An empirical investigation using hermeneutic interpretation. *MIS Quarterly*, *18*, 143–157.

Lee, C. P. (2007). Boundary negotiating artifacts: Unbinding the routine of boundary objects and embracing chaos in collaborative work. *Computer Supported Cooperative Work*, *16*, 307–339. doi:10.1007/s10606-007-9044-5

Leonard-Barton, D. (1995). *Wellsprings of knowledge: Building and sustaining the sources of innovation*. Boston, MA: Harvard Business School Press.

Lesk, M. (2005). *Understanding digital libraries* (2nd ed.). Boston, MA: Morgan Kaufmann.

Levina, N., & Vaast, E. (2005). The emergence of boundary spanning competence in practice: Implications for implementation and use of information systems. *MIS Quarterly*, *29*, 335–363.

Levy, D. M., & Marshall, C. C. (1995). Going digital: A look at assumptions underlying digital libraries. *Communications of the ACM*, *38*(4), 77–84. doi:10.1145/205323.205346

LibraryThing. (2013). Common Knowledge. In *WikiThing: LibraryThing's Wiki*. Retrieved from http://www.librarything.com/wiki/index.php/Common_Knowledge

LibraryThing. (2014). Zeitgeist. In *LibraryThing: Catalog your books online*. Retrieved from http://www.librarything.com/zeitgeist

LibraryThing. (n.d.-a). Who we are. In *LibraryThing: Catalog your books online*. Retrieved from http://www.librarything.com/whoweare.php

LibraryThing. (n.d.-b). About LibraryThing. In *LibraryThing: Catalog your books online*. Retrieved from http://www.librarything.com/about

LibraryThing. (n.d.-c). Tour. In *LibraryThing: Catalog your books online*. Retrieved from http://www.librarything.com/tour/

LibraryThing. (n.d.-d). A short introduction to LibraryThing. In *LibraryThing: Catalog your books online*. Retrieved from http://www.librarything.com/quickstart.php

Licklider, J. C. R. (1965). *Libraries of the future*. Cambridge, MA: MIT Press. Retrieved from http://openlibrary.org/

Lincoln, Y. S., & Guba, E. G. (1985a). Implementing the naturalistic inquiry. In *Naturalistic inquiry* (pp. 250–288). Newbury Park, CA: Sage.

Lincoln, Y. S., & Guba, E. G. (1985b). Establishing trustworthiness. In *Naturalistic inquiry* (pp. 289–331). Newbury Park, CA: Sage.

Lu, C., Park, J., & Hu, X. (2010). User tags versus expert-assigned subject terms: A comparison of LibraryThing tags and Library of Congress Subject Headings. *Journal of Information Science, 36*, 763–779. doi:10.1177/0165551510386173

Lutters, W. G., & Ackerman, M. S. (2007). Beyond boundary objects: Collaborative reuse in aircraft technical support. *Computer Supported Cooperative Work*, *16*, 341–372. doi:10.1007/s10606-006-9036-x

Lynch, C. (2005). Where do we go from here? The next decade for digital libraries. *D-Lib Magazine*, *11*(7/8). doi:10.1045/july2005-lynch

Maclay, K. (2003, September 24). Profesor emeritus Patrick Wilson, librarian and philosopher, dies at 75. *UC Berkeley NewsCenter*. Press release. Retrieved from http://www.berkeley.edu/news/media/releases/2003/09/24_wilson.shtml

Marchionini, G. (1999). Augmenting library services: Towards the sharium. In K. Tabata & S. Sugimoto (Eds.), *Proceedings of International Symposium on Digital Libraries 1999* (pp. 40–47). Tuskuba, Japan: University of Library and Information Science. Retrieved from http://ils.unc.edu/~march/sharium/ISDL.pdf

Marchionini, G., Plaisant, C., & Komlodi, A. (2003). The people in digital libraries: Multifaceted approaches to assessing needs and impact. In A. P. Bishop, N. A. Van House, & B. P. Buttenfield (Eds.), *Digital library use: Social practice in design and evaluation* (pp. 119–160). Cambridge, MA: MIT Press.

Marchionini, G., Wildemuth, B. M., & Geisler, G. (2006). The Open Video Digital Library: A Möbius strip of research and practice. *Journal of the American Society for Information Science and Technology*, *57*, 1629–1643. doi:10.1002/asi.20336

Marshall, C. C., & Bly, S. (2004). Sharing encountered information: Digital libraries get a social life. In H. Chen, H. D. Wactlar, C. Chen, E.-P. Lim, & M. G. Christel (Eds.), *Proceedings of the 4th ACM/IEEE Joint Conference on Digital Libraries* (pp. 218–227). New York, NY: ACM. doi:10.1145/996350.996401

McIver, J. P., & Carmines, E. G. (1981). *Unidimensional scaling*. Beverly Hills, CA: Sage.

Meleis, A. I. (1991). A model for evaluation of theories: Description, analysis, and critique of theory. In *Theoretical nursing: Development and progress* (2nd ed., pp. 213–245). Philadelphia, PA: J. B. Lippincott.

Meyers, E. M., Fisher, K. E., & Marcoux, E. (2009). Making sense of an information world: The everyday-life information behavior of preteens. *Library Quarterly, 79*, 301‑341. doi:10.1086/599125

Milgram, S. (1967). The small world problem. *Psychology Today*, *2*(1), 61–67.

Mills, K. L. (2010). Computer-supported cooperative work (CSCW). In M. J. Bates & M. N. Maack (Eds.), *Encyclopedia of Library and Information Sciences* (3rd ed., pp. 1234–1249). Boca Raton, FL: CRC Press.

Moreira, B. L., Gonçalves, M. A., Laender, A. H. F., & Fox, E. A. (2009). Automatic evaluation of digital libraries with 5SQual. *Journal of Informetrics*, *3*, 102–123. doi:10.1016/j.joi.2008.12.003

Murillo, E. (2011). Communities of practice in the business and organization studies literature. *Information Research*, *16*(1). Retrieved from http://informationr.net/ir/16-1/paper464.html

Naik, Y. (2012). Finding good reads on Goodreads: Readers take RA into their own hands. *Reference and User Services Quarterly, 51*, 319–323.

Nakamura, L. (2013). "Words with friends": Socially networked reading on Goodreads. *Publications of the Modern Language Association of America, 128*, 238–243. doi:10.1632/pmla.2013.128.1.238

Naughton, R., & Lin, X. (2010). Recommender systems: Investigating the impact of recommendations on user choices and behaviors. In B. P. Knijnenburg, L. Schmidt-Thieme, & D. Bollen (Chairs), *Proceedings of the ACM RecSys 2010 workshop on User-Centric Evaluation of Recommender Systems and Their Interfaces (UCERSTI)* (pp. 9–13), Barcelona, Spain, September 30, 2010. CEUR. Retrieved from http://ceur-ws.org/Vol-612/paper2.pdf

Neuhold, E., Niederée, C., & Stewart, A. (2003). Personalization in digital libraries: An extended view. In T. M. T. Sembok, H. B. Zaman, H. Chen, S. R. Urs, & S. H. Myaeng (Eds.), *Lecture Notes in Computer Science: Vol. 2911. Digital Libraries: Technology and Management of Indigenous Knowledge for Global Access* (pp. 1–16). Berlin, Germany: Springer-Verlag. doi:10.1007/b94517

Nichols, D., Pemberton, D., Dalhoumi, S., Larouk, O., Belisle, C., & Twidale, M. B. (2000). DEBORA: Developing an interface to support collaboration in a digital library. In J. Borbinha & T. Baker (Eds.), *Lecture Notes in Computer Science: Vol. 1923: Research and Advanced Technology for Digital Libraries* (pp. 239–248). Berlin, Germany: Springer-Verlag. doi:10.1007/3-540-45268-0_22

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, *5*, 14–37.

Olson, G. M., & Olson, J. S. (2000). Distance matters. *Human–Computer Interaction*, *15*, 139–178. doi:10.1207/S15327051HCI1523_4

Olson, J. S., Grudin, J., & Horvitz, E. (2005). A study of preferences for sharing and privacy. In G. van der Veer & C. Gale (Chairs), *Proceedings of CHI '05: Extended abstracts on human factors in computing systems* (pp. 1985–1988), Portland, OR, April 2-7, 2005. New York, NY: ACM. doi:10.1145/1056808.1057073

Open Video Project. (n.d.). *The Open Video Project: Contribute video.* Retrieved from http://www.open-video.org/contribute.php

Organization. (2013). *Oxford English Dictionary* [Online version]. Oxford, UK: Oxford University Press. Retrieved from http://www.oed.com/view/Entry/132452?redirectedFrom=organizations#eid

Orlikowski, W. J., & Robey, D. (1991). Information technology and the structuring of organizations. *Information Systems Research*, *2*, 143–169. doi:10.1287/isre.2.2.143

Pawlowski, S. D., & Robey, D. (2004). Bridging user organizations: Knowledge brokering and the work of information technology professionals. *MIS Quarterly*, *28*, 645–672.

Pawlowski, S. D., Robey, D., & Raven, A. (2000). Supporting shared information systems: Boundary objects, communities, and brokering. In W. J. Orlikowski (Ed.), *Proceedings of the 21st International Conference on Information Systems* (pp. 329–338). Atlanta, GA: Association for Information Systems. Retrieved from http://portal.acm.org/citation.cfm?id=359640.359759

Pendleton, V. E., & Chatman, E. A. (1998). Small world lives: Implications for the public library. *Library Trends*, *46*, 732–751.

Pettigrew, K. E. (1999). Waiting for chiropody: Contextual results from an ethnographic study of the information behaviour among attendees at community clinics. *Information Processing and Management, 35*, 801–817. doi:10.1016/S0306-4573(99)00027-8

Pomerantz, J., & Marchionini, G. (2007). The digital library as place. *Journal of Documentation*, *63*, 505–533. doi:10.1108/00220410710758995

Preece, J., & Maloney-Krichmar, D. (2003). Online communities: Focusing on sociability and usability. In J. A. Jacko & A. Sears (Eds.), *The human-computer interaction handbook* (pp. 596–620). Mahwah, NJ: Lawrence Erlbaum Associates.

QSR International. (2012). Run a Coding Comparison query. In *NVivo 10 help*. Retrieved from http://help-nv10-en.qsrinternational.com/nv10_help.htm#procedures/run_a_coding_comparison_query.htm

Raber, D. (2003). *The problem of information: An introduction to information science*. Lanham, MD: Scarecrow Press.

Rayward, W. B. (1997). The origins of information science and the International Institute of Bibliography/International Federation for Information and Documentation (FID). *Journal of the American Society for Information Science*, *48*, 289–300. doi:10.1002/(SICI)1097-4571(199704)48:4<289::AID-ASI2>3.0.CO;2-S

Rehberg Sedo, D. (2003). Readers in reading groups: An online survey of face-to-face and virtual book clubs. *Convergence, 9*(1), 66–90. doi:10.1177/135485650300900105

Rehberg Sedo, D. (2011a). "I used to read anything that caught my eye, but …": Cultural authority and intermediaries in a virtual young adult book club. In D. Rehberg Sedo (Ed.), *Reading communities from salons to cyberspace* (pp. 101-122). New York, NY: Palgrave Macmillan.

Rehberg Sedo, D. (Ed.) (2011b). *Reading communities from salons to cyberspace*. New York, NY: Palgrave Macmillan.

Renda, M. E., & Straccia, U. (2005). A personalized collaborative digital library environment: A model and an application. *Information Processing and Management*, *41*, 5–21. doi:10.1016/j.ipm.2004.04.007

Rheingold, H. (2000). *The virtual community: Homesteading on the electronic frontier* (revised ed.). Cambridge, MA: MIT Press.

Ribes, D., Wallis, J. C., Edwards, P., Bowker, G. C., Buyuktur, A. G., Jackson, S., & Borgman, C. L. (2012). *The state of infrastructure studies.* Discussion panel presented at iConference 2012, Toronto, Canada, February 7-10, 2012.

Ridenour, C. S., & Newman, I. (2008). *Mixed methods research: Exploring the interactive continuum*. Carbondale, IL: Southern Illinois University Press.

Roberts, J. (2006). Limits to communities of practice. *Journal of Management Studies*, *43*, 623–639. doi:10.1111/j.1467-6486.2006.00618.x

Roberts, N. (1976). Social considerations towards a definition of information science. *Journal of Documentation*, *32*, 249–257. doi:10.1108/eb026627

Rosenbaum, H. (2014). The past: Brief comments on the history of social informatics. In P. Fichman & H. Rosenbaum (Eds.), *Social informatics: Past, present, and future* (pp. 2–28). Newcastle, UK: Cambridge Scholars Publishing.

Rosenberg, V. (1974). The scientific premises of information science. *Journal of the American Society for Information Science*, *25*, 263–269. doi:10.1002/asi.4630250409

Sapsford, R. (1999). *Survey research*. Thousand Oaks, CA: Sage.

Savolainen, R. (1995). Everyday life information seeking: Approaching information seeking in the context of "way of life." *Library and Information Science Research*, *17*, 259–294. doi:10.1016/0740-8188(95)90048-9

Sawyer, S., & Eschenfelder, K. R. (2002). Social informatics: Perspectives, examples, and trends. *Annual Review of Information Science and Technology*, *36*, 427–465. doi:10.1002/aris.1440360111

Sawyer, S., & Tapia, A. (2007). From findings to theories: Institutionalizing social informatics. *The Information Society*, *23*, 263–275. doi:10.1080/01972240701444196

Scharber, C. (2009). Online book clubs: Bridges between old and new literacies practices. *Journal of Adolescent and Adult Literacy, 52*, 433–437. doi:10.1598/JAAL.52.5.7

Scharber, C. M., Melrose, A., & Wurl, J. (2009). Online book clubs for preteens and teens. *Library Review, 58*, 176–195. doi:10.1108/00242530910942036

Schutt, R. (2009). *Investigating the social world: The process and practice of research* (6th ed.). Thousand Oaks, CA: Pine Forge Press.

Seraj, M. (2012). We create, we connect, we respect, therefore we are: Intellectual, social, and cultural value in online communities. *Journal of Interactive Marketing*, *26*, 209–222. doi:10.1016/j.intmar.2012.03.002

Shibutani, T. (1955). Reference groups as perspectives. *American Journal of Sociology*, *60*, 562–569.

Shilton, K. (2010). Participatory sensing: Building empowering surveillance. *Surveillance and Society*, *8*, 131–150.

Shilton, K., Koepfler, J. A., & Fleischmann, K. R. (2013). Charting sociotechnical dimensions of values for design research. *The Information Society*, *29*, 259–271. doi:10.1080/01972243.2013.825357

Site. (2014). *Oxford English Dictionary* [Online version]. Oxford, UK: Oxford University Press. Retrieved from http://www.oed.com/view/Entry/180472?rskey=lfhhMQ&result=2 &isAdvanced=false#eid

Smith, L. C. (1981). "Memex" as an image of potentiality in information retrieval research and development. In R. N. Oddy (Ed.), *Information retrieval research: Proceedings of SIGIR '80, the 3rd annual ACM conference on research and development in information retrieval* (pp. 345–369). London, UK: Butterworths.

Smith, L. C. (1991). Memex as an image of potentiality revisited. In J. N. Nyce & P. Kahn (Eds.), *From memex to hypertext: Vannevar Bush and the mind's machine* (pp. 261–286). Boston, MA: Academic Press.

Sonnenwald, D. H. (2007). Scientific collaboration. *Annual Review of Information Science and Technology*, *41*, 643–681. doi:10.1002/aris.2007.1440410121

Sonnenwald, D. H., Marchionini, G., Wildemuth, B. M., Dempsey, B. J., Viles, C. L., Tibbo, H. R., & Smith, J. B. (1999). Collaboration services in a participatory digital library: An emerging design. In T. Aparac, T. Saracevic, P. Ingwersen, & P. Vakkari (Eds.), *Proceedings of the Third International Conference on the Conceptions of Library and Information Science: Digital libraries: Interdisciplinary concepts, challenges, and opportunities* (pp. 141–152). Lokve, Croatia: Benja Publishing. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.26.5897&rep=rep1&type=pdf

Star, S. L. (1989). The structure of ill-structured solutions: Boundary objects and heterogeneous distributed problem solving. In L. Gasser & M. N. Huhns (Eds.), *Distributed artificial intelligence* (Vol. 2, pp. 37–54). San Mateo, CA: Morgan Kaufmann.

Star, S. L. (2002). Infrastructure and ethnographic practice: Working on the fringes. *Scandinavian Journal of Information Systems*, *14*, 107–122.

Star, S. L. (2010). This is not a boundary object: Reflections on the origin of a concept. *Science, Technology and Human Values*, *35*, 601–617. doi:10.1177/0162243910377624

Star, S. L., Bowker, G. C., & Neumann, L. J. (2003). Transparency beyond the individual level of scale: Convergence between information artifacts and communities of practice. In A. P. Bishop, N. A. Van House, & B. P. Buttenfield (Eds.), *Digital library use: Social practice in design and evaluation* (pp. 241–269). Cambridge, MA: MIT Press.

Star, S. L., & Griesemer, J. R. (1989). Institutional ecology, `translations' and boundary objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science*, *19*, 387–420. doi:10.1177/030631289019003001

Star, S. L., & Ruhleder, K. (1996). Steps toward an ecology of infrastructure: Design and access for large information spaces. *Information Systems Research*, *7*, 111–134. doi:10.1287/isre.7.1.111

Star, S. L., & Strauss, A. (1999). Layers of silence, arenas of voice: The ecology of visible and invisible work. *Computer Supported Cooperative Work, 8*, 9–30. doi:10.1023/A:1008651105359

Storberg-Walker, J. (2008). Wenger's communities of practice revisited: A (failed?) exercise in applied communities of practice theory-building research. *Advances in Developing Human Resources*, *10*, 555–577. doi:10.1177/1523422308319541

Stover, K. M. (2009). Stalking the wild appeal factor: Readers' advisory and social networking sites. *Reference and User Services Quarterly, 48*, 243–269.

Strauss, A. (1978). A social world perspective. In N. K. Denzin (Ed.), *Studies in symbolic interaction: An annual compilation of research* (Vol. 1, pp. 119–128). Greenwich, CT: JAI Press.

Strauss, A., & Corbin, J. (1994). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *The handbook of qualitative research* (pp. 273–285). Thousand Oaks, CA: Sage.

Strauss, A., Schatzman, L., Bucher, R., Ehrlich, D., & Sabshin, M. (1964). *Psychiatric ideologies and institutions*. New York, NY: Free Press of Glencoe.

Stvilia, B., Jörgensen, C., & Wu, S. (2012). Establishing the value of socially-created metadata to image indexing. *Library and Information Science Research*, *34*, 99–109. doi:10.1016/j.lisr.2011.07.011

Stvilia, B., Twidale, M. B., Smith, L. C., & Gasser, L. (2008). Information quality work organization in Wikipedia. *Journal of the American Society for Information Science and Technology*, *59*, 983–1001. doi:10.1002/asi.20813

Suchman, L., & Jordan, B. (1990). Interactional troubles in face-to-face survey interviews. *Journal of the American Statistical Association*, *85*(409), 232–241.

Sutton, B. (2010). Qualitative research methods in library and information science. In M. J. Bates & M. N. Maack (Eds.), *Encyclopedia of Library and Information Sciences* (3rd ed., pp. 4380–4393). Boca Raton, FL: CRC Press.

Swan, J., Bresnen, M., Newell, S., & Robertson, M. (2007). The object of knowledge: The role of objects in biomedical innovation. *Human Relations, 60*, 1809 –1837. doi:10.1177/0018726707084915

Talja, S. (2002). Information sharing in academic communities: Types and levels of collaboration in information seeking and use. *The New Review of Information Behavior Research*, *3*, 143–159.

Talja, S., Tuominen, K., & Savolainen, R. (2005). "Isms" in information science: Constructivism, collectivism and constructionism. *Journal of Documentation*, *61*, 79-101. doi:10.1108/00220410510578023

Technology. (2013). *Oxford English Dictionary* [Online version]. Oxford, UK: Oxford University Press. Retrieved from http://www.oed.com/view/Entry/198469 ?redirectedFrom=technology

Trant, J. (2006). Social classification and folksonomy in art museums: Early data from the steve.museum tagger prototype. In J. Furner & J. T. Tennis (Eds.), *Advances in Classification Research: Volume 17. Proceedings of the American Society for Information Science and Technology Special Interest Group in Classification Research Workshop*. Retrieved from http://www.archimuse.com/papers/asist-CR-steve-0611.pdf

Tsikerdekis, M. (2013). The effects of perceived anonymity and anonymity states on conformity and groupthink in online communities: A Wikipedia study. *Journal of the American Society for Information Science and Technology, 64*, 1001–1015. doi:10.1002/asi.22795

Tuominen, K., & Savolainen, R. (1997). A social constructionist approach to the study of information use as discursive action. In P. Vakkari, R. Savolainen, & B. Dervin (Eds.), *Information seeking in context: Proceedings of an international conference on research in information needs, seeking and use in different contexts* (pp. 81–96). Los Angeles, CA: Taylor Graham. Retrieved from http://informationr.net/isic/ISIC1996/96_Tuominen.pdf

Tuominen, K., Talja, S., & Savolainen, R. (2003). Multiperspective digital libraries: The implications of constructionism for the development of digital libraries. *Journal of the American Society for Information Science and Technology*, *54*, 561–569. doi:10.1002/asi.10243

Turner, T. C., & Fisher, K. E. (2006). The impact of social types within information communities: Findings from technical newsgroups. In Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS 39) (p. 135b). Piscataway, NJ: IEEE. doi:10.1109/HICSS.2006.471

Urquhart, C., Light, A., Thomas, R., Barker, A., Yeoman, A., Cooper, J., Armstrong, C., et al. (2003). Critical incident technique and explicitation interviewing in studies of information behavior. *Library and Information Science Research*, *25*, 63–88. doi:10.1016/S0740-8188(02)00166-4

Van House, N. A. (2003). Digital libraries and collaborative knowledge construction. In A. P. Bishop, N. A. Van House, & B. P. Buttenfield (Eds.), *Digital library use: Social practice in design and evaluation* (pp. 271–295). Cambridge, MA: MIT Press.

Vitak., J. (2012). The impact of context collapse and privacy on social network site disclosures. *Journal of Broadcasting and Electronic Media, 56*, 451-470. doi:10.1080/08838151. 2012.732140

Wacker, R. F. (1995). The sociology of race and ethnicity in the second Chicago School. In G. A. Fine (Ed.), *A second Chicago school? The development of a postwar American sociology* (pp. 136–163). Chicago, IL: University of Chicago Press.

Wasko, M. M., & Faraj, S. (2000). "It is what one does": Why people participate and help others in electronic communities of practice. *The Journal of Strategic Information Systems*, *9*, 155–173. doi:16/S0963-8687(00)00045-7

Weinberg, D. (2009). Social constructionism. In B. S. Turner (Ed.), *The new Blackwell companion to social theory* (pp. 281–299). Wiley.

Wellman, B. (1982). Studying personal communities. In P. V. Marsden & N. Lin (Eds.), *Social structure and network analysis* (pp. 61–80). Beverly Hills, CA: Sage.

Wellman, B. (1999). The network community: An introduction. In *Networks in the global village: Life in contemporary communities* (pp. 1–47). Boulder, CO: Westview Press.

Wellman, B., & Gulia, M. (1999). Virtual communities as communities: Net surfers don't ride alone. In M. A. Smith & P. Kollock (Eds.), *Communities in cyberspace* (pp. 167-194). New York, NY: Routledge.

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, UK: Cambridge University Press.

Wenger, E. (2000). Communities of practice and social learning systems. *Organization*, *7*, 225–246. doi:10.1177/135050840072002

Wenger, E. (2006, June). *Communities of practice: A brief introduction*. Retrieved from http://www.ewenger.com/theory/index.htm

Wenger, E., McDermott, R. A., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston, MA: Harvard Business School Press.

Westbrook, L. (1997). Qualitative research. In R. R. Powell (Ed.), *Basic research methods for librarians* (3rd ed., pp. 143–163). Greenwich, CT: Ablex.

Whittaker, S., Isaacs, E., & O'Day, V. (1997). Widening the Net: The theory and practice of physical and network communities [CSCW '96 workshop report]. *SIGGROUP Bulletin*, *18*(1), 28–32. doi:10.1145/271159.271166

Wiese, J., Kelley, P. G., Cranor, L. F., Dabbish, L., Hong, J. I., & Zimmerman, J. (2011). Are you close with me? Are you nearby? Investigating social groups, closeness, and willingness to share. In J. Landay & Y. Shi (Chairs), *Proceedings of the 2011 ACM Conference on Ubiquitous Computing (Ubicomp '11)* (pp. 197–206). New York, NY: ACM. doi:10.1145/2030112.2030140

Wilson, P. (1983). Cognitive authority in everyday life. In *Second-hand knowledge: An inquiry into cognitive authority* (pp. 123–163). Westport, CT: Greenwood Press.

Wilson, T. D. (1981). Sociological aspects of information science. *International Forum on Information and Documentation*, *6*(2), 13–18.

Wilson, T. D. (1999). Models in information behaviour research. *Journal of Documentation, 55*, 249–270. doi:10.1108/EUM0000000007145

Woolsey, L. K. (1986). The critical incident technique: An innovative qualitative method of research. *Canadian Journal of Counselling*, *20*, 242–254.

Worrall, A. (2010). Supporting community-building in digital libraries: A pilot study of LibraryThing. In A. Grove (Ed.), *Proceedings of the 73rd ASIS&T Annual Meeting: Navigating streams in an information ecosystem*, Pittsburgh, PA, October 22-27, 2010. Silver Spring, MD: American Society for Information Science and Technology. doi:10.1002/meet.14504701389

Worrall, A. (2013a). *A boundary-centric approach to studying mobile information sharing.* Ignite talk presentation given at the 13th Annual ASIS&T SIG USE Research Symposium: Information Behavior on the Move: Information Needs, Seeking, and Use in the Era of Mobile Technologies, 76th ASIS&T Annual Meeting, Montreal, Canada, November 2, 2013.

Worrall, A. (2013b). *"Back onto the tracks": Convergent community boundaries in LibraryThing and Goodreads*. Paper presented at the 9th Annual Social Informatics Research Symposium: The Social Informatics of Information Boundaries, 76th ASIS&T Annual Meeting, Montreal, Canada, November 2, 2013.

Worrall, A. (2013c). The role of digital libraries as boundary objects within and across communities. In W. Moen (Chair), *iConference 2013 proceedings* (pp. 707-711), Fort Worth, TX, February 12-15, 2013. Champaign, IL: iSchools. doi:10.9776/13327

Worrall, A., & Oh, S. (2013). The place of health information and socio-emotional support in social questioning and answering. *Information Research*, *18*(3). Retrieved from http://informationr.net/ir/18-3/paper587.html

Worrall, A. (2014). *The roles of digital libraries as boundary objects within and across social and information worlds*. Poster presented in the ALISE / Jean Tague-Sutcliffe Doctoral Poster Competition at the 2014 Association for Library and Information Science Education (ALISE) Annual Conference, Philadelphia, PA, January 21-24, 2014.

Worrall, A., Marty, P. F., Roberts, J., Burnett, K., Burnett, G., Hinnant, C. C., Kazmer, M. M., Stvilia, B., & Wu, S. (2012). Observations of the lifecycles and information worlds of collaborative scientific teams at a national science lab. In J.-E. Mai (Chair), *iConference 2012 proceedings* (pp. 423-425), Toronto, Canada, February 7-10, 2012. New York, NY: ACM. doi:10.1145/2132176.2132234

Yin, R. K. (2003). Designing case studies. In *Case study research: Design and methods* (3rd ed., pp. 19–56). Thousand Oaks, CA: Sage.

You, S. (2010). *Evaluative metadata in educational digital libraries: How users use evaluative metadata in the process of document selection* (Doctoral dissertation). Florida State University, Tallahassee, FL. Retrieved from ProQuest Dissertations and Theses. (3462371)

Zachry, M. (2008). An interview with Susan Leigh Star. *Technical Communication Quarterly*, *17*, 435–454. doi:10.1080/10572250802329563

Zarro, M., & Hall, C. (2012). Pinterest: Social collecting for #linking #using #sharing [Poster]. In K. B. Boughida & B. Howard (Chairs), *Proceedings of JCDL '12, the 12th ACM / IEEE-CS Joint Conference on Digital Libraries* (pp. 417–418), June 10-14, 2012, Washington, DC. New York, NY: ACM. doi:10.1145/2232817.2232919

Zickuhr, K. (2013). Location-based services [Report]. Washington, DC: Pew Research Center. Retrieved from http://www.pewinternet.org/2013/09/12/location-based-services/

Zubiaga, A., Körner, C., & Strohmaier, M. (2011). Tags vs shelves: From social tagging to social classification. In P. De Bra (Chair), *Proceedings of HT '11, the 22nd ACM Conference on Hypertext and Hypermedia* (pp. 93–102), Eindhoven, Netherlands, June 6-9, 2011. New York, NY: ACM. doi:10.1145/1995966.1995981

BIOGRAPHICAL SKETCH

Adam Worrall is a Doctoral Candidate in Information Studies at the Florida State University (FSU) School of Information (Florida's iSchool). He has an MS in Library and Information Studies, also from FSU, and a BS in Computer Science from the University of Central Florida. His research interests include social informatics; digital libraries; information behavior; scientific collaboration; social media; online communities; and social and community theories in information science. These fall under the common thread of studying information and information behavior within and around the sociotechnical contexts of information and communication technologies (ICTs). Adam's web site is at http://www.adamworrall.org.

JOURNAL PUBLICATIONS
- Stvilia, B., Hinnant, C., Wu, S., **Worrall, A.**, Lee, D. J., Burnett, K., Burnett, G., Kazmer, M. M., & Marty, P. F. (in press, 2014). Research project tasks, data, and perceptions of data quality in a condensed matter physics community. *Journal of the American Society for Information Science and Technology*. Advance online publication. doi:10.1002/asi.23177
- Burnett, G., Burnett, K., Kazmer, M. M., Marty, P. F., **Worrall, A.**, Knop, B., Hinnant, C. C., Stvilia, B., & Wu, S. (2014). Don't tap on the glass, you'll anger the fish! The information worlds of distributed scientific teams. In P. Fichman & H. Rosenbaum (Eds.), *Social informatics: Past, present, and future* (pp. 118-134). Newcastle, UK: Cambridge Scholars Publishing.
- **Worrall, A.**, & Oh, S. (2013). The place of health information and socio-emotional support in social questioning and answering. *Information Research, 18*(3). http://informationr.net/ir/18-3/paper587.html
- Oh, S., & **Worrall, A.** (2013). Health answer quality evaluation by librarians, nurses, and users in social Q&A. *Library and Information Science Research*, *35*(4), 288-298. doi:10.1016/j.lisr.2013.04.007
- Hinnant, C. C., Stvilia, B., Wu, S., **Worrall, A.**, Burnett, G., Burnett, K., Kazmer, M. M., & Marty, P. F. (2012). Author team diversity and the impact of scientific publications: Evidence from physics research at a national science lab. *Library and Information Science Research, 34*(4), 249-257. doi:10.1016/j.lisr.2012.03.001
- Stvilia, B., Hinnant, C. C., Schindler, K., **Worrall, A.**, Burnett, G., Burnett, K., Kazmer, M. M., & Marty, P. F. (2011). Composition of scientific teams and publication productivity at a national science lab. *Journal of the American Society for Information Science and Technology, 62*(2), 270-283. doi:10.1002/asi.21464

CONFERENCE PAPERS
- **Worrall, A.** (2013). *"Back onto the tracks": Convergent community boundaries in LibraryThing and Goodreads*. Paper presented at the 9th Annual Social Informatics Research Symposium: The Social Informatics of Information Boundaries, 76th ASIS&T Annual Meeting, Montreal, Canada, November 2, 2013.
- **Worrall, A.** (2013). Social digital libraries: Their roles within and across social worlds, information, worlds, and communities. In S. J. Cunningham & E. Rasmussen (Eds.), *Proceedings of the Doctoral Consortium, JCDL 2013, the 13th ACM/IEEE Joint Conference on Digital Libraries* (pp. 55-62), Indianapolis, IN, July 22, 2013

- Oh, S., Yi, Y. J, & **Worrall, A.** (2012). Quality of health answers in social Q&A. In A. Grove (Ed.), *Proceedings of the 75th ASIS&T Annual Meeting: Information, interaction, innovation: Celebrating the past, constructing the present and creating the future*, Baltimore, MD, October 26-30, 2012. Silver Spring, MD: American Society for Information Science and Technology. doi:10.1002/meet.14504901075

RESEARCH AND TEACHING EXPERIENCE

Lead Graduate Instructor (Technologies for Information Professionals)   8/2013 - 5/2014
School of Information, Florida State University, Tallahassee, FL
Graduate Research Assistant (NSF #0942855; PI: Dr. Kathy Burnett)   1/2010 - 8/2012
Virtual Scientific Teams: Life-Cycle Formation and Long-Term Scientific Collaboration
Graduate Teaching Assistant (varied courses)   8/2009 - 12/2009; 8/2012 - 8/2013
School of Library and Information Studies, Florida State University, Tallahassee, FL
Syllabus Development (Qualitative Research Methods)   5/2010 - 8/2010
School of Library and Information Studies, Florida State University, Tallahassee, FL

FELLOWSHIPS, SCHOLARSHIPS, AWARDS

FSU iSchool Outstanding Doctoral Student Award, 2013-14   4/2014
Beta Phi Mu Eugene Garfield Doctoral Dissertation Fellowship   7/2013
FSU SLIS Outstanding Teaching Assistant Award, 2012-13   4/2013
FSU Esther Maglathlin Doctoral Research Scholarship   8/2012 - 8/2013
Nominated for FSU Graduate Student Leadership Award, 2011-12   4/2012
FSU SLIS College Leadership Award, 2010-11   4/2011
FSU College Teaching Fellowship   8/2009 - 8/2010

ACADEMIC AND PROFESSIONAL SERVICE

Association for Information Science and Technology (ASIS&T)   2/2010 - present
     Communications Officer, SIG SI   10/2012 - present
     Member, Task Force on ASIS&T Web Presence   1/2013 - present
     Jury Member, Cretsos Leadership Award   2013
     Jury Member, SIG SI Best Student Paper Award   2013
Student Facilitator, FSU iSchool Agraphia writing support group   8/2011 - 3/2014
Doctoral Student Rep., FSU iSchool Doctoral Program Committee   10/2010 - 8/2012
Secretary, Beta Phi Mu, Gamma Chapter (at FSU)   1/2010 - 12/2011
Representative, Congress of Graduate Students (COGS)   9/2009 - 7/2011
     Vice Chair, COGS Academics and Student Life Committee   12/2010 - 7/2011

HONORS

Florida State University Fellows Society   8/2009 - present
Beta Phi Mu   Inducted 10/2008
Phi Kappa Phi   4/2008 - present
Golden Key International Honour Society   Inducted 9/2001
Upsilon Pi Epsilon (UCF chapter)   Inducted 4/2001
National Society of Collegiate Scholars (UCF chapter)   Inducted 8/2000