

University of Alberta

**The Shoemaker's Son: A Substantive Theory of Social Media Use for
Knowledge Sharing in Academic Libraries**

by

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in partial fulfillment of the requirements for the degrees of

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Abstract

In the last decade social media have become integrated in the knowledge sharing practices of libraries. While an entire genre of literature is devoted to the use of social media for promotion (i.e., 'Library 2.0'), little research has been done on the use of social media for organizational knowledge sharing in academic libraries. Using knowledge management as a framing discourse, this study addresses the gap in the literature by examining social media use at two academic libraries. Analysis of qualitative interviews with 14 librarians using a Grounded Theory approach produces a substantive theory of social media use for knowledge sharing in academic libraries, revealing that these tools are underused for the purpose of dialogue and the sharing of tacit knowledge, and providing practical implications for their future implementation. This study establishes a theoretical framework for the examination of how social media are used in organizations that can inform future research.

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CHAPTER ONE: RESEARCH OVERVIEW

1.1. Introduction

In the last decade, the term ‘social media’ has become a buzzword for collaborative and user-oriented tools on the web. When we casually consider the usefulness of the web as a technology, it is no longer—or at least, rarely—as a global repository of hyperlinked documents, but rather as a vast network of exchanges between individuals. Users have become far more integrated with this technology; the creation and dissemination of information has become a far more interactive process, thanks to a host of innovations that facilitate interactions in virtual space. Some of these innovations, such as the blog, the wiki and the ubiquitous social network, have become so commonplace that we hardly think twice about their role in how we access and share knowledge every day.

Academic librarians, perhaps more than any other professionals, stand to benefit from a critical engagement with these social innovations. Poised upon the intersection of scholars and students and academic knowledge, librarians must negotiate the emergence of new information technologies to effectively answer the research needs of library users. Understanding the level of adoption and integration of ‘social media’ among librarians and within academic libraries is not only valuable, but necessary, if we ever wish to learn the impact the web has had and is having on knowledge sharing practice. While an entire genre of literature is devoted to the concept of ‘Library 2.0’ and the use of social media for promotion and outreach (Casey & Savastinuk, 2007; Chad & Miller, 2005; Farkas, 2007; Stephens, 2006), surprisingly little research has been done on the use of social media for organizational communication and knowledge sharing. Using knowledge management (KM) as a framing discourse, this study addresses this gap in the literature by examining social media use at two academic libraries.

1.2. Research Questions

In the years since Tim O'Reilly first coined the term "Web 2.0" (O'Reilly, 2005), the host of innovations that today are commonly considered 'social media' have become integrated in our knowledge sharing practices. In certain areas, such as the corporation, research has given us a sense of just *how* integrated they are (Huh et al., 2007; Grudin & Poole, 2010). This study takes a first step toward understanding the degree to which social media have been integrated into the knowledge sharing practices of the academic library by exploring the following questions:

1. How are social media (in particular: blogs, wikis and social networks) being used in academic libraries for organizational communication and knowledge sharing? What functions do they/can they support in this environment?
2. How do academic librarians perceive and use social media? What are the prevailing attitudes toward such technologies?
3. From a knowledge management perspective, do social media currently represent/create/facilitate communities of practice in academic libraries? Could they in the future, and if so, how?

To investigate these questions, I conducted semi-structured exploratory interviews with fourteen librarians at two different academic libraries: Grant MacEwan University Library and the University of Alberta Libraries. Interviews at Grant MacEwan University included six librarians and staff from three of its four library branches/campuses. Interviews from the University of Alberta Libraries included eight interviews with librarians and staff from the two largest of its fourteen branches/units: the Rutherford Humanities and Social Sciences (HSS) Library and the Cameron Science and Technology Library. These interviews took place in Edmonton between May 2011 and August 2012.

1.3. Grant MacEwan University Library

Grant MacEwan University is a young institution by most standards. Founded in 1971 as a community college in Edmonton, Alberta, it is only since 2004 that it has expanded to offer full bachelor's degrees. In 2009, Grant MacEwan was officially renamed a university, with a full and diverse array of undergraduate programs that are expected to significantly increase its student body. Based on figures from the 2010-2011 academic year, the institution serves over 43,000 students per year, 13,889 of which are full-time (FLE) students ("Grant MacEwan University", 2012). With an operating budget of \$222.3 million, today Grant MacEwan provides 62 program options, distributed among its four faculties (Arts and Communications, Health and Community Studies, Liberal Arts and Sciences, and Business) (Ibid.).

The library must provide support for all of the programs offered at Grant MacEwan, including a considerable instructional mandate. At the time of the interviews, this included a cross-campus staff of eighteen full-time and part-time librarians, and thirteen library technicians. Since the institution was divided not only by faculty but also geographically by campus the library system included four libraries located at each of the university's four campuses (i.e., herein after referred to as "main campus", "campus B", "campus C" and "campus D"). Most of the participants interviewed worked at the largest of the four campuses, main campus; two of the participants worked at one of the satellite campuses (campus B and campus C), and the geographic separation revealed a dramatic difference in the use of available knowledge sharing tools and communication methods, particularly with the use of the blog-based 'Library Intranet Portal' (LIP). The library organization is structured around two units: the Reference Department, which includes most of the public service and campus librarians, and Borrower Services, which is primarily composed of circulation and associate staff, and administrators. In total, the library holds 470,689 books, periodicals and audio-visual materials ("Grant MacEwan University", 2012).

In January 2009 LIP went live. It has since become a vital tool for the library reference staff at Grant MacEwan, particularly for the librarians located at

the Main Campus. In early 2009 a project completion report was published (Appendix Five, “Project Completion Report”). This report recommends that LIP should be expanded beyond the Reference department; at the time of interviews in 2011, this change had not yet been implemented, and LIP was still limited to the Reference staff.

1.4. University of Alberta Libraries

The University of Alberta was founded in 1908, and has served a fundamental role in the formation of local and provincial identity over the last century. It has expanded steadily in that time, both in size and influence. Today it is consistently ranked as one of the top five universities in Canada, and in the top 150 universities worldwide (“Academic Ranking of World Universities”, 2012; “QS World University Rankings”, 2012; “THE World University Rankings”, 2012). For the 2010-2011 academic year, the University of Alberta registered a total of 38,282 students (University of Alberta Strategic Analysis Office, 2011). 34,553 of those students are represented as full-load equivalent (FLE), a measure used to determine full-time enrollment.

The University of Alberta Libraries ranks similarly against university and research libraries, with the second-largest collection of Canadian ARL (Association of Research Libraries) member libraries in number of volumes and titles held, and the fifteenth largest in North America in number of volumes (ARL Statistics, 2009). During the 2009-2010 academic year the University of Alberta held a total of 7,220,635 individual volumes, or 3,424,623 unique titles (Ibid.). In the same year, the library employed a total of 324 staff (FTE), 88 of whom were professional staff (i.e., librarians) and 209 support/associate staff (i.e., technicians and paraprofessionals). The library uses a staff intranet called Staffnet and a system-wide wiki for public service. It also has a Twitter account, which it uses to communicate events and updates to library users.

1.4.1. Rutherford (HSS) Library

Lauded as the “second largest research library in Canada”, Rutherford is the largest of more than a dozen libraries that form the University of Alberta Libraries system (“Rutherford (Humanities and Social Sciences) Library”, 2008). It houses a collection of nearly two million items, serving the research needs of students and faculty in the humanities and social sciences at the University of Alberta (“Rutherford Library – A Brief History”, n.d.). Erected in 1951, it was the first free-standing library building on-campus. Up until that time, the university library had been housed in make-shift spaces in departments across the campus. In 1973, to continue housing its ever-growing collection, the library opened the Rutherford North expansion.

The Rutherford librarians cater primarily to the 6,043 undergraduate students and 881 graduate students registered in the Faculty of Arts (University of Alberta Strategic Analysis Office, 2011). In addition to this, as a research institution the University of Alberta also employs 1,598 full-time (FTE) faculty members, 358 of which are located in the Faculty of Arts (Ibid.).

The librarians at Rutherford Library must support these students and faculty, and all of the humanities and social sciences programs that the University offers. Like the Grant MacEwan librarians, this means a mandate to develop the collection appropriately, to provide information literacy instruction, and to support the reference and research needs of its users. When interviews took place in Fall 2011, Rutherford Library employed nine full-time librarians and one sessional (non-permanent) librarian, as well as twelve full-time associate staff. At the time of the interviews, there was no department-specific social media tool in evidence at Rutherford.

1.4.2. Cameron (Science and Technology) Library

Cameron Library first opened in 1964, during a period of intense growth at the University of Alberta. At the time, Cameron was intended to house the graduate research collections, while the Rutherford Library held the

undergraduate and reserve collections (“Libraries”, 2008). Today the distinction falls rather on disciplinary lines; while Rutherford supports the Faculty of Arts, Cameron is devoted to the Science and Engineering faculties. In addition to this, Cameron represents the nerve center of the University of Alberta Libraries system; most of the offices of the system’s administrators and directors can be found here, as well as additional system-wide organizational units.

In the 2010-2011 academic year the Cameron librarians primarily serviced 5,682 (FLE) undergraduate students and 1,219 (FLE) graduate students (University of Alberta Strategic Analysis Office, 2011). They also supported 151 (FTE) academic staff in the Faculty of Engineering, and 333 (FTE) academic staff in the Faculty of Science (Ibid.).

The Cameron Library unit, not including librarians physically located at Cameron that are part of system-wide units (e.g., IT Support, Digital Initiatives, Bibliographic Services), is comprised of seven full-time librarians, two additional public service assistants, and an unknown number of associate staff. Cameron uses the same intranet and system-wide wiki as Rutherford. At the time of interviews in Spring 2012, Cameron also had begun to use a public Twitter account, as well as a Facebook page, which were both documented in the unit’s social media policy (Appendix Six, “Cameron Social Media Guidelines”).

1.5. Theoretical Framework

Grounded Theory (GT) is an inductive research methodology emerging from sociology that encourages the “persistent interaction with data, while remaining constantly involved in emerging analyses” (Bryant & Charmaz, 2010). The ultimate goal of GT is to generate a substantive theory about a “basic social process” (Glaser, 1978, 106; Glaser & Strauss, 1967; Bryant & Charmaz, 2010). While contested in its application, constructivist GT remains an extremely versatile approach to the data collection and analysis of a poorly understood or little-explored area through a commitment to iteratively developing an emergent model or theory of the social process in question (Charmaz, 2002). In other words, GT is a methodology employed in research to *create* a theoretical

framework that can provide an explanation for the “causes, conditions and consequences” of a specific social process (Ibid., 677). This study is deeply informed by GT as an approach to developing a framework for studying how academic librarians currently use social media, and to supply an emergent substantive theory for social media’s role in the knowledge sharing practices of academic libraries.

In any organization, the creation and transfer of knowledge is an essential process that dictates the establishment of organizational communication and training practices. Such practices are often facilitated or made possible by communication and IT tools, such as email, chat, videoconferencing, and other social software. The primary preoccupation of knowledge management (KM) is the study of these organizational knowledge practices. It thus serves as an ideal lens for studying the use of social media for the purposes of organizational communication and knowledge sharing. While KM does not represent a single framework but rather a field of research, it provides both a knowledge-centric perspective with which to approach my research problem and a well-developed body of literature that can enhance the discussion of my findings.

A more detailed explanation of KM and its relationship to both social media and libraries can be found in Chapter Two (“Literature Review”). Further discussion of GT and its application in analysis of interviews can be found in Chapter Three (“Research Design”) and in Chapter Four (“Coding Process”).

1.6. Methodological Engagement

As a secondary goal, this research seeks to provide a road map for new researchers undertaking qualitative research. It is commonly accepted that interpretation in qualitative analysis is not as clearly defined as it is when employing quantitative methods (Banister, 2005; Carcary, 2011; Kvale, 1996, 13). Relying on a social constructionist paradigm, this research will serve as a case study in methodology and GT for novice researchers struggling with the challenge of interpretation. To this end, a more in-depth discussion than is typically expected of a Master’s thesis takes place in Chapter Four (“Coding Process”).

Relying on Given and Olson's (2003) knowledge organization (KO) model and Strauss and Corbin's (1998) guidelines for qualitative analysis, this discussion will report on the considerations and outcomes of the applied methodology while also explaining how the study's results were obtained through the coding of interview data. It thus serves as a manual for the construction of this study's grounded theoretical framework. Chapter Four will also present an interpretation of the analytical process through the autoethnographic study of my research journal. This autoethnography explores the implications of using computer-assisted qualitative data analysis software (CAQDAS) to facilitate analysis, as well as the personal and epistemological insights that occurred during the process of coding.

1.7. Value of Research

The use of social media for organizational knowledge sharing in the academic library has, for the most part, been overlooked in LIS research. Studies on social media use in academic libraries are only now beginning to emerge (e.g., Xu et al., 2009; Rodriguez, 2010; Chu, 2011; Chu et al., 2012; Costello & Del Bosque, 2010; Del Bosque, et al. 2012), and tend to be limited to externally oriented communication. This study contributes to the field of LIS by identifying at what level(s) social media have become integrated in academic library practice as well as librarians' attitudes toward the use of such innovations in a knowledge management context. By contributing an emergent theory of social media use, this research provides a foundation for future LIS research to build upon. This research also contributes a new avenue of exploration to the field of knowledge management; while KM scholars have certainly begun to explore the application of social media for the creation and dissemination of organizational knowledge, only rarely have they tested their assumptions in the unique environment of the academic library. In addition, by providing a comprehensive analysis of the current role of social media in that environment and the potential uses or misuses for such innovations that can be foreseen by practitioners, the results of this study also have practical benefits for academic libraries. The aim of this research is to determine if and how social media are being used in academic libraries, and an

outcome of that is to suggest how social media could be used to enhance knowledge sharing and communication among staff members. More effective organizational communication will result in a more effective service for students and faculty, and ultimately, benefit the academic institution as a whole.

1.8. Summary

This chapter provided an overview of study goals by identifying the research questions: How are social media being used for organizational knowledge sharing in academic libraries? What are the prevailing attitudes of academic librarians toward social media? Do examples of social media in these academic libraries represent, create or facilitate communities of practice? As an introduction to this research, the chapter also provided essential background information on the study sites, and described the role of GT and KM in framing my research. Finally, it has described the value of the research in the fields of LIS, KM and GT; the study addresses an evident gap in LIS literature, and in a secondary capacity provides a road map for novice researchers undertaking similar qualitative research.

The thesis is arranged as follows: Chapter Two consists of a review of the literature, providing a summary of the concepts of social media, knowledge management, and communities of practice, as well as other important theoretical concepts and their interrelationships in the context of the current research. Knowledge of these concepts will also be important in the later discussion of study results. Chapter Three describes the research methodology in detail, breaking down the methods used at each level of the study, the ethical considerations in designing this research, and providing clear, concise definitions for difficult or contested concepts. As an uncharacteristic but valuable addition to the thesis, Chapter Four presents a methodical assessment of the coding process and analysis undertaken for this study, and explains in careful detail how results were obtained. It also provides its own results in the form of an autoethnographic interpretation of journal notes, in order to highlight the implications of this study's analytical approach. Chapter Five provides study results in the form of

narrative reports on social media implementations identified in interviews, and how participants perceived and used them. Chapter Six identifies and describes an emergent substantive theory of social media use in academic libraries, which serves to answer the study's research questions. This chapter examines emergent theory by discussing the significance of results in the context of communities of practice, knowledge management and other concepts introduced in Chapter Two, and suggesting how the current findings might be extended through the application of these other theoretical lenses. Chapter Seven concludes with a summary of findings, study limitations and avenues for future research.

CHAPTER TWO: LITERATURE REVIEW

My study is situated at the intersection of several different research areas. Existing research on organizational communication and knowledge sharing in the fields of LIS and knowledge management (KM), and more specifically the roles cast by Web 2.0 and social media within such research, informs my study significantly. It is the gap presented by such research, when considered as a whole, which motivates my study. At the same time, by addressing the various areas that inform my study, I add something to the conversation within the discourses they evoke through the discussion of my results (Chapter Six, “Discussion”). This chapter provides a survey of the literature in each of these areas as it relates to the study, while at the same time forging a bridge between each one that defines the scope and rationale for my research.

This chapter begins with an overview of literature on the study of organizational communication and organizational knowledge in academic libraries. It then defines the paradigm of Web 2.0 within the context of my research. Social media as a product of Web 2.0 is further defined, exploring four specific manifestations of them as represented in LIS literature; blogs, wikis and social networks are three forms, or innovations, that broadly define social media, and that figure prominently in my results (Chapter Five, “Results”). I also discuss literature about a fourth innovation, the ‘intranet’; rather than being a form of social media in itself, an intranet represents the application of web-based solutions—sometimes incorporating the dynamic social features of blogs, wikis and social networks—for internal knowledge sharing in organizations. As the primary media for web-based internal communication, intranets also play a significant role in the two libraries studied in my research. Review of this literature about social media in LIS naturally leads to a broader discussion of ‘Library 2.0’, and the guiding principles around this movement in librarianship. I take the time to challenge the assumptions behind these principles, and more importantly situate my own research within a gap presented by the treatment of

Library 2.0 in LIS. In particular, I problematize the notion of ‘user’, and suggest that knowledge management (KM) permits a more inclusive redefinition of the ‘user’ in the process of exchanging organizational knowledge through the use of social media in academic libraries. I further explore the boundaries of the identified research gap with the concept of ‘Academic Library 2.0’, a lesser-known offshoot of Library 2.0; literature in this area provides a first step in addressing organizational knowledge sharing in academic libraries. The focus of the chapter then shifts to provide a general introduction to knowledge management (KM) and the key concepts that define it as a field. From there, I discuss the application of KM to the study of social media and in libraries, respectively, emphasizing the knowledge-centric approach that KM represents. I then introduce three classifications of knowledge sharing that are derived from KM and LIS literature, which will later be treated in the discussion of study results (Chapter Six, “Discussion”). The chapter concludes with the introduction of two theoretical models, presented in the context of the current study: innovation diffusion and, significantly, communities of practice. These are also essential to the contextualization of findings that takes place later in this thesis (Chapter Six). Diffusion of Innovations Theory proves a useful tool later in the thesis for re-examining the relevant findings of my substantive theory on social media use in academic libraries. Meanwhile, the perspective on knowledge sharing that motivates communities of practice (or CoPs) is even more significant, as a concept that has been adopted within KM and, moreover, as an explicit component of my research questions.

2.1. Communication and Organizational Knowledge in Academic Libraries

Fostering a community that communicates and shares knowledge collaboratively and effortlessly is certainly a worthy goal for any organization. This is no less true for the academic library. The management literature is rich with examples of university and college libraries testing new strategies and technologies to improve knowledge sharing and collaboration among staff (e.g., Costello & Del Bosque, 2010; Chu, 2009; McIntyre & Nicolle, 2008; Rodriguez, 2010; Stephens, 2006; Welsh, 2007; Wiebrands, 2006). The majority of these

studies, however, have focused on a particular implementation or tool (e.g., Chu, 2009; McIntyre & Nicolle, 2008; Rodriguez, 2010; Welsh, 2007; Wiebrands, 2006), or provide suggested practices based on the casual observation of trends (e.g., Casey & Savastinuk, 2007; Stephens, 2006). Most discuss the advantages and disadvantages of technology implementations for internal communication only briefly, while focusing rather on the more pressing implications for service delivery. It is no surprise to those familiar with the library's public service orientation that most research about its use of social media has emphasized externally oriented communication; it is every library's mission to build productive relationships with patrons by "connecting people to recorded knowledge in all forms" ("1.3. Vision", 2011). Such literature dealing with the use of Web 2.0 to develop and improve participatory, user-driven services falls under the rubric 'Library 2.0' (Casey & Savastinuk, 2007; Courtney, 2007; Stephens, 2006). I will discuss its relationship to the current study in greater detail later in this chapter (section 2.4).

A study by Kristen Costello and Darcy Del Bosque (2010) is the only one encountered in my literature review that purposefully examines the role of social media for internal knowledge sharing, studying users' perceptions of the widespread implementation of blogs and wikis at University of Nevada Las Vegas (UNLV) library using a survey instrument. This study is one of only a few that attempt to take the pulse of internally oriented social media use in academic libraries. Several studies discuss the role of social media for internal communication and organizational knowledge sharing, but focus on the implementation of a particular tool as a case study for best practices and future use (e.g., Rodriguez, 2010; Wiebrands, 2006), rather than generating and analyzing data in order to understand the current state of use. Such studies promote what Rogers' (1995) calls "pro-innovation bias" (205): the literature is replete with examples of innovation successes, but rarely reports innovation failures, thus suggesting that an innovation is more widely adopted than it actually is. Samuel Kai-Wah Chu (2009) examines the current state of use in 60 academic libraries using a survey instrument, but limits his study to the implementation of

wikis. More recently, Chu et al. (2012) presented results of a similar survey on librarians' implementations of and interactions on social networking sites (SNS). This leaves open a gap in the existing research on social media, posing the question: how are academic libraries *actually* using social media? While a survey of the cases found in the relevant literature reveals how these tools *can* be used under exemplary conditions, it does not provide an accurate sense of how most academic libraries are currently using them in practice, and how academic librarians perceive their use for the purpose of organizational knowledge sharing.

2.2. Web 2.0

In 2004, Tim O'Reilly introduced his revolutionary—or perhaps more accurately, *evolutionary*—vision of how the Web should be used. This concept, dubbed 'Web 2.0', represents a fundamental paradigm shift that transformed popular perception of the Web as a vast repository of documents into an interactive, infinitely expandable platform for user-driven services. It emphasizes a set of core values, including user-generated data, architecture of participation, scalability and harnessing collective intelligence, among others (O'Reilly, 2005). Social media are the *applications* or software that build on the ideological and technological foundations of Web 2.0 by allowing the creation and exchange of user-generated content (Kaplan & Haenlein, 2010, 61).

This paradigm shift is significant, since not only did it herald the coming of now-ubiquitous social networking sites like Facebook and Twitter, and not only did it provide us new ways of understanding how existing social media such as blogs, wikis, message boards and tagging software could be used collectively, but because it gave libraries the principles upon which to develop a model for participatory service. The advent of Web 2.0 is particularly important as a red letter event for libraries since it gave librarians a new lease; for many, it represented a way of rebranding themselves to library users and of re-conceptualizing the role of the library in society (Black, 2007, 10; Casey & Savastinuk, 2007; Chad & Miller, 2005; Stephens, 2006). From the notion of Web

2.0 stems other conceptual buzzwords, such as Library 2.0 and the “Knowledge Commons” (Casey & Savastinuk, 2007; Shuhuai, et al., 2008).

Web 2.0’s emphasis on the user also puts into question what we mean by ‘user’. Ostensibly, the user is any individual that *uses* the technology. But context sets boundaries on our understanding of *who* the user is. In the context of internal organizational communication, the user is the employee, the manager, the CEO (Kaplan & Haenlein, 2010). In the context of external organizational communication, the user is the customer, the consumer, the stakeholder (Ibid.). These social identities affect who we interpret the user to be. Knowledge management (KM), discussed at length later in this chapter, tends to focus on internal organizational knowledge sharing, but it is important to understand that it is not limited to that highly specific context. Similarly, Library 2.0 assumes that the user is the library patron (Chad & Miller, 2005). It is essential to remember that Web 2.0 as a broader paradigm does not distinguish the user in this way; the universal user *uses*, and regardless of the other contexts that make up an individual’s identity, the individual-as-user is defined by their use of a given tool, technology or medium.

2.3. Social Media

Given the admittedly vague and colloquial nature of the term ‘social media’, it behooves me to define it within the context of my research. Broadly, social media are defined as a myriad of Web 2.0-inspired technologies that encourage collaboration and the production of user-generated content (UGC) (Kaplan & Haenlein, 2010). While this research is interested in librarians’ perceptions of the entire concept of social media and their engagement with these technologies from a perspective inspired by information behaviour studies, it limits its focus of social media use within the organizational environment to four major categories: the blog, the wiki, the social network and the intranet. While other concepts embedded in or ancillary to that of social media, such as folksonomies, recommender systems, and collaborative cloud computing software are discussed— sometimes at length—during interviews with participants, the

four types of social media mentioned are most relevant to my study of the knowledge sharing activities of academic librarians.

2.3.1. Blog

As Michael Stephens' (2006) notes in *Web 2.0 & Libraries: Best practices for social software*, the blog is the most discussed Web 2.0 innovation, its popularity rising precipitously at the same time O'Reilly's values of Web 2.0 first began to gain traction. 'Blog' was 2004's most-searched word on *Merriam-Webster Online* (Stephens, 2006, 15), which provided the following definition to curious web users:

Blog (noun) [short for *Weblog*] (1999): a Web site that contains an online personal journal with reflections, comments, and often hyperlinks provided by the writer. (<http://www.merriam-webster.com/info/04words.htm>)

The blog is by far the most popular tool mentioned in the related literature, particularly in the context of Library 2.0, since it aggregates a number of key functions related to communicating with library users. These include sharing news and information for particular user groups, promoting events or resources, marketing, and outreach (Costello & Del Bosque, 2010, 146; Stephens, 2006, 15-35). In his book, Stephens provides a comprehensive survey of blogs and their uses in the library context. In terms of internal communication and knowledge sharing, Stephens indicates that "internal blogging can replace e-mail in many instances, bulletin-board postings, and even some meetings!" (21). Michael Casey and Laura Savastinuk (2007), authors of *Library 2.0: A Guide to Participatory Library Service*, corroborate Stephens' enthusiastic endorsement by succinctly offering the following list of advantages for using internal blogs in libraries (79-81):

- Blog communication is asynchronous: you do not have to get people together at the same time as you do for chat or face-to-face meetings;

- it facilitates both ‘horizontal’ communication (staff member to staff member) and ‘vertical’ communication (management to staff member, staff member to management) among staff;
- it can support a local community of librarians or staff (at the branch or department-level), or be implemented system-wide;
- it can address local issues and interactions (on a branch or department-level blog) as easily as it can host big-picture discussions (on a system-wide blog).

Casey and Savastinuk observe that “efficiency has displaced the sense of team” (79). Library staff and management are provided less time to engage in the social interactions that foster a sense of camaraderie and community in an increasingly fast-paced work environment. Blogs, they state, are exceptionally well-suited to facilitating this vital form of communication in the library work environment (79-80). Costello and Del Bosque (2010) provide a current and detailed survey of the literature with examples of cases where blogs have succeeded in this task, as well as examples where they have not. Their findings about the efficacy of blogs in academic libraries remain inconclusive (146-147; 155-156).

2.3.2. Wiki

According to Meredith Farkas (2007), creator of Library Success: Best Practices Wiki (<http://libsucces.org>) and author of *Social Software in Libraries*, the wiki is an application that permits “a group of people with no knowledge of HTML or other markup languages develop a Web site collaboratively.” (68) Derived from the Hawaiian word for “quick”, the wiki predates the invention of Web 2.0, having been developed by programmer Ward Cunningham in 1994 as a simple solution for collaborative web publishing (Farkas, 2007, 67; Chu, 2009, 170). Like the blog, its popularity soared following the Web 2.0 paradigm shift, helped in no small part by the sweeping success of Wikipedia, which remains the most effective example of large-scale collective intelligence and crowdsourcing of knowledge on the web.

In his 2009 study of wikis in academic libraries, Samuel Kai-Wah Chu echoes many of the same benefits of the technology Farkas surveys in her book, while providing current findings about librarians' perceptions of the tool and its application in practice. Based on these, Chu (2009) emphasizes four reasons for academic libraries to implement wikis (172-173):

- to facilitate co-construction of web pages;
- to enhance information sharing among librarians;
- to archive different versions of work online;
- to speed up the updating of web pages.

Chu's (2009) survey results revealed that the most common reason participants gave for implementing a wiki was to enhance information sharing among librarians (172).

Often used for training and the dissemination of both formal and informal procedures and processes in organizations (Farkas, 2007, 77-80; Welsh, 2007; Wiebrands, 2006), it is not surprising that wikis are the Web 2.0 technology most commonly associated with KM principles (e.g., Grudin & Poole, 2010). KM shares a preoccupation with the creation and dissemination of organizational knowledge oriented internally (i.e., for the training and development of staff). Chu (2009) and Costello and Del Bosque (2010) acknowledge the unique affordance of wikis that facilitates the sharing of both tacit knowledge and explicit knowledge through the application of a collaborative framework.

2.3.3. Social Network

Perhaps the most difficult concept to define, social networking sites (SNS) like Facebook and Twitter, and the now-defunct MySpace, are hybrids of interactive services that embody the values of Web 2.0. In their attempt to rescue the term 'social media' and to define it conclusively for the benefit of scholars and business managers alike, Andreas M. Kaplan and Michael Haenlein (2010) describe the social network as follows:

Social networking sites are applications that enable users to connect by creating personal information profiles, inviting friends and colleagues to have access to those profiles, and sending e-mails and instant messages between each other. These personal profiles can include any type of information, including photos, video, audio files, and blogs. (63)

The concept of the social network is not new, but extremely relevant in the current discourse that surrounds Web 2.0. It originates in 1967, when social psychologist Stanley Milgram conducted so-called “small world” experiments, concluding that “everyone in the world is connected to everyone else by, at most, six people” (Farkas, 2007, 109-110; Mathews, 2007; Buchanan, 2002). Milgram’s research contributed to the field of network theory and, subsequently, the development of social networking software. While Meredith Farkas (2007) agrees that activity on SNS focuses on the user profile as its principal feature, in her chapter on the subject she discusses the ability to create and join groups based on common interests as an additional feature (111). For this reason, my research categorizes online content communities such as Flickr and YouTube as “social networks” as well, and will discuss them within the context of the hybridization—or aggregation—of Web 2.0 services.

Farkas (2007) emphasizes the practicality of SNS for libraries, describing it as a way to build a presence that library users will recognize. In this sense, social networks play an important role in serving the goals of Library 2.0; Del Bosque et al. (2012) confirm that Twitter, for instance, is valuable to libraries as a method for marketing and customer service, permitting them to “forge a connection” with library users (201). Del Bosque et al. further note in their study that, while Twitter has the ability to reach and interact with library users, academic libraries have been slow to adopt (i.e., only one third of academic libraries surveyed had Twitter accounts), and very few of those used it to carry on two-way conversation (210). Chu et al.’s (2012) survey of public and academic

libraries in China and other, English-speaking countries indicated that users of academic libraries' social networks used it primarily for one-to-one communication, while users of public libraries' networks are more interested in one-to-many/many-to-one knowledge sharing (7).

Farkas does not discuss any implications for internal communication, nor do any of the researchers that have written about the use of social networks in libraries (Casey & Savastinuk, 2007, 95-102; Mathews, 2007). This is particularly striking in Casey and Savastinuk (2007), who devote sections of their book to possible internal implementations of blogs and wikis, but lack a similar section for SNS (despite devoting a section to the discussion of "social networking" (95-102)). However, in their discussion of social networking, Casey and Savastinuk (2007) do consider the effect on developing informal professional networks between librarians. Flickr, a content community website that permits users to share photos and comment on them, is cited as an example of a social networking site that librarians use to meet other librarians, such as Michael Porter's Flickr group "Libraries and Librarians" (<http://www.flickr.com/groups/librariesandlibrarians>) (98-99). In 2007 the group had 1,000 members; as of this writing, it now boasts nearly 4,000 members, and over 41,000 images. The "Libraries and Librarians" Flickr group is an example of a self-organizing network or *community of practice*, a concept that I use in my analysis, and which I will discuss further in this chapter.

One reason the social network is so challenging to define is that it remains a concept-in-flux. Several of the references cited above refer to MySpace as the predominant social network; in the span of a few short years, MySpace has been completely eclipsed by Facebook, which has proven more popular and has become as commonplace to web users as Google (Casey & Savastinuk, 2007; Farkas, 2007; Mathews, 2007). Moreover, new models for the social network have emerged, such as Twitter (Del Bosque et al., 2012; Chu et al., 2012); while still relying on the user profile as a central hub from which users connect to other nodes on the network, Twitter has introduced the concepts of microblogging and

social tagging in a format that combines synchronous and asynchronous communication as a way of accessing and sharing information relevant to a particular user's interests (Aharony, 2010). New platforms continue to emerge that redefine the medium, such as Instagram and Pinterest, both social media that arose recently in concurrent research on social media use in NPOs (Forcier et al., 2013). As an area in constant transition, the social network as Web 2.0 tool deserves further research, particularly in the ways it is being used by librarians and in libraries.

2.3.4. Intranet

While it may seem odd to include this as a category for social media, I have done so because staff intranets—internal websites restricted to branch, department or system staff—are a common IT feature in academic libraries. Intranets are typically used to share information relevant to staff. However, as mentioned above, while they are not strictly considered ‘social media’, they are capable of hosting—and often do—dynamic social content by incorporating Web 2.0 features in their design. While intranet users may not be aware of it, many staff intranets incorporate the social elements of blogs (e.g., user commenting, informal updates), social networks (e.g., user profiles) and wikis (e.g., collaborative website design, collaborative development of reference documentation). Farkas (2007), for instance, notes that wikis serve as an excellent format for staff intranets (77), and Battles (2010) reports that a redesign of the University of Alabama Libraries’ intranet brought about new opportunities for colleagues to “participate and collaborate” (263). Battles’ indicates that the goal of any intranet is not just to “put everything in one place”, but also to serve this information to users “in an easily accessible and personalized way.” (254) The incorporation of existing wikis into the new design was an essential part of achieving this goal. My research is concerned with how participants use intranets—pre-existing, ostensibly static technology—in dynamic ways that reflect the values of Web 2.0.

2.4. Library 2.0

Library 2.0 takes the term ‘user’ and applies it in a far more specific context, referring to “library users”, rather than all web users. As a concept, Library 2.0 is focused on providing the same kind of services Web 2.0 advocates, but specifically for library users. The term became current in the wake of O’Reilly’s efforts to define Web 2.0, popularized by practitioners Michael Casey (2006) and Ken Chad and Paul Miller (2005). Elizabeth L. Black (2007) reviews this history in detail, in her essay “Web 2.0 and Library 2.0: What Librarians Need to Know” (10-11). Chad and Miller (2005) first proposed four principles that define the movement (9):

1. The library is everywhere.
2. The library has no barriers.
3. The library invites participation.
4. The library uses flexible, best-of-breed systems.

These four principles emphasize the role of the library as a public service provider; the values of Web 2.0 allowed librarians like Chad and Miller to reframe their purpose as experts prepared to answer the information needs of users, rather than as gatekeepers of an institution’s collection. Casey and Savastinuk (2007) further define Library 2.0 by including the following purpose statements (5-6):

- Library 2.0 is a model for constant and purposeful change;
- Library 2.0 empowers library users through participatory, user-driven services; and,
- Through the implementation of the first two elements, Library 2.0 seeks to improve services to current library users while also reaching out to potential library users.

The essential element in both of these definitions is the user focus: Library 2.0, as Casey and Savastinuk (2007) remind us, is about empowering users and

giving them the opportunity to assist in the creation and content management of services (6). In this sense, Library 2.0 is concerned with the intersection between library, library user, and the Web 2.0 technologies that can help facilitate and foster that relationship (Figure 2.1).

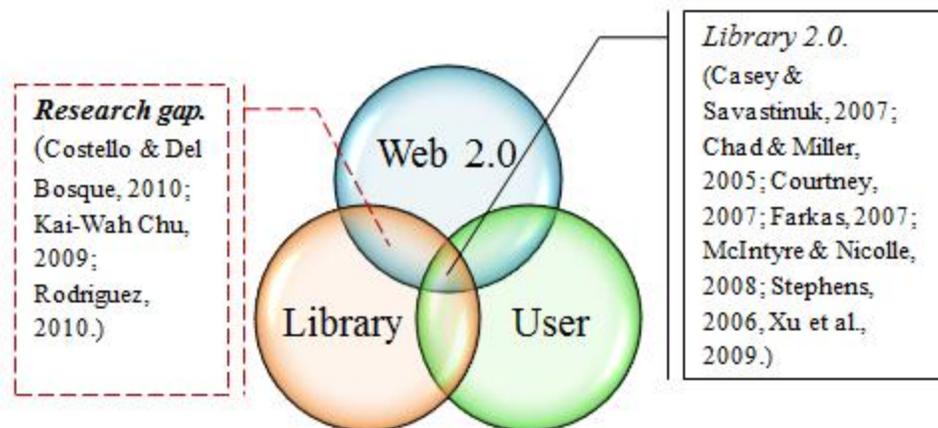


Figure 2.1. Venn diagram depicting the model for Library 2.0, with references to literature relevant to the denoted areas. The “research gap” situates the focus of the current study on organizational knowledge sharing in academic libraries, at the intersection of Web 2.0 and Library. This avoids the problematic assumption of ‘user’ as an agent external to the organization implied in the Library 2.0 literature.

There is no shortage of literature that deals with the use of social media for enhancing the library’s relationship with the library user (or, in short, *external* communication); many of the texts referenced above fall into this category of Library 2.0 literature. It is important to discuss this literature in the context of my research for two reasons: 1) Since the Library 2.0 literature that deals with Web 2.0 in libraries is so rich, it serves as a touchstone for the study of social media use; 2) It provides a point of reference from which to situate my own research on social media use in the way it relates to organizational knowledge and KM. In other words, the interactions this study is interested in might be *internal*, *external*, or less-easily defined forms of knowledge sharing (i.e., what Xu et al. (2009) describe as “N-ways”, see below). The focus on *organizational knowledge* (i.e., *knowledge management*) distinguishes this research from the Library 2.0

literature, while also extending its implications; the study is primarily (but not exclusively) concerned with how Web 2.0 is used internally within the library, setting aside the role of the user as defined by Library 2.0. In so doing, it forces a redefinition of the ‘user’ as an agent that may operate internally, externally, or both (Figure 2.2). This agent becomes something more akin to Web 2.0’s universal user, mediated by successive layers of social identities (e.g., student, staff member, faculty member, librarian, researcher). The space identified in Figures 2.1 and 2.2 represents the gap in current research that I fill with this study, first by reorienting the research on the specific intersection between Web 2.0 and Library while avoiding the problematic external focus of ‘user’ assumed by Library 2.0 (Figure 2.1), and then by refining our understanding of who the user could be within this new orientation (Figure 2.2).

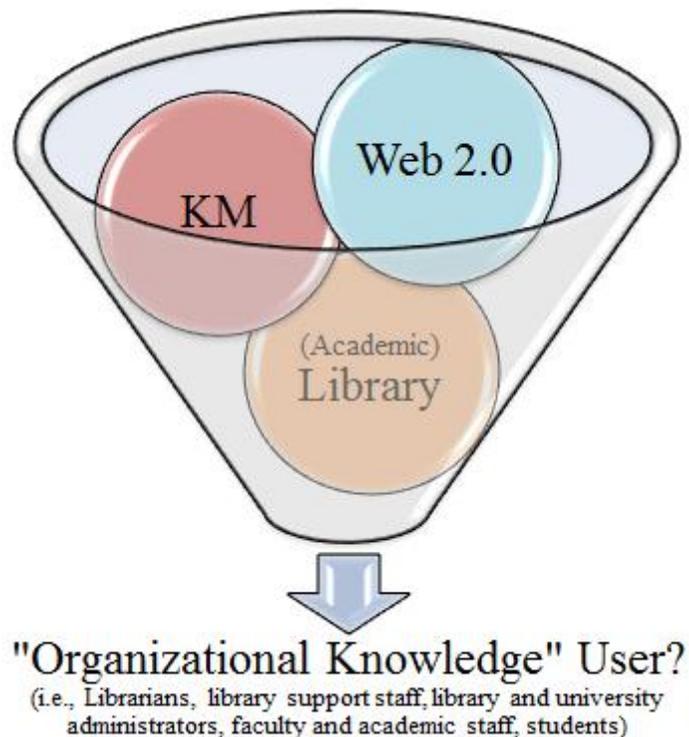


Figure 2.2. *The organizational knowledge user. The emphasis on organizational knowledge introduced by knowledge management (KM) redefines what is meant by ‘user’. The intersection between Web 2.0 and Library in the context of KM does not suggest an exclusively external “library user”, as defined in Library 2.0 literature, but rather a user of organizational (i.e., library) knowledge who might be internal, external or something less easily defined.*

2.5. Academic Library 2.0

The concept of an *academic* Library 2.0 is not original. An offshoot of the Library 2.0 literature is traced back to Michael Habib (2006), whose Master's Thesis introduced the concept of Library 2.0 methodology situated in the academic environment. Habib focuses on how such an application of principles would benefit students in both their scholarly and social pursuits, and does not venture into the implications for organizational knowledge sharing. Similarly, Liu (2008) describes the benefits of implementing Web 2.0 tools in academic library websites to better serve and engage library users (i.e., students and faculty). Both reflect the inherent assumption about the user of mainstream Library 2.0 literature, and its externally oriented perspective on knowledge sharing. Xu et al. (2009), on the other hand, re-conceptualized the notion of an Academic Library 2.0 as the intersection of Web 2.0 with librarian ("Librarian 2.0"), library user ("User 2.0") and information ("Information 2.0") in a three-dimensional space (330): their model is reproduced in Figure 2.3. Within this model, librarians and

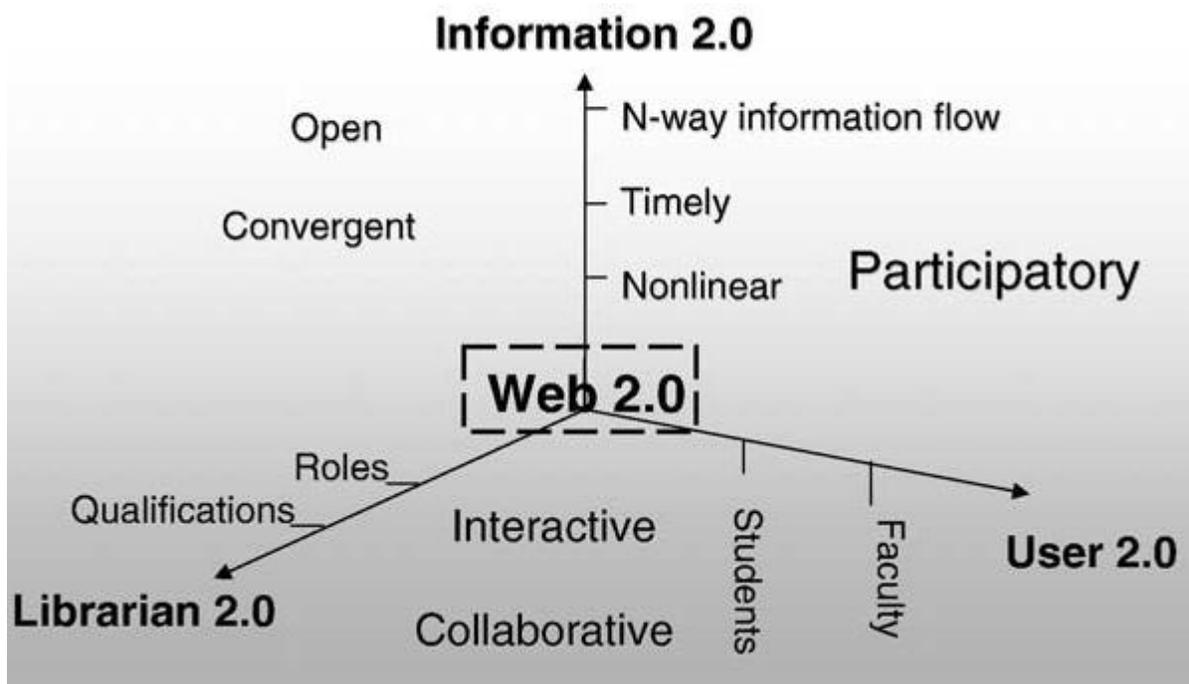


Figure 2.3. Xu et al.'s model for Academic Library 2.0 (2009, 330).

library staff interact and collaborate with each other, and with faculty and students in a manner that is open and convergent. While the persistent distinction between librarian and user remains, the open flow of information “n-way”—“among librarians and users in all possible directions” (Ibid.)—makes it possible to examine organizational knowledge sharing in academic libraries through social media as something that is *rhizomatic*.

The following section explains the origins and significance of knowledge management (KM) in the context of my research, which adds perspective to the general concept of ‘knowledge sharing’ as it has been discussed thus far. The concept of ‘knowledge sharing’ is then revisited and defined through the lens of KM.

2.6. Knowledge Management (KM)

KM provides a convenient toolbox for evaluating the application of social media in an organizational context. Since KM is most concerned with the creation and transfer of organizational knowledge, it is uniquely suited to the examination of social media for organizational communication and knowledge sharing within the academic library. It also provides a means of surpassing the popular conceptions of ‘social media’ and ‘Web 2.0’ to reveal the true value of these innovations for organizations.

The modern organization, scholars and practitioners agree, is *knowledge-based* (Hara, 2006; Prusak, 2001; Senge, 1991). Peter Drucker’s *Post-capitalist Society* (1994) announced the arrival of today’s knowledge-based economy: “The basic economic resource—‘the means of production’...— is no longer capital, nor natural resources... nor labor. *It is and will be knowledge.*” (8). Control of natural resources is what drove the economy during the Industrial Age; organizations during that period were described as “resource-based” (Senge, 1991; Hara, 2006). In the Information Age, by contrast, the market share of organizations is determined by how well they create, disseminate and effectively use knowledge. The knowledge and information needs of workers is the most valuable commodity

today's corporations must trade in to be successful. The knowledge-based economy is the 'social fact' that makes KM an essential function of organizations.

KM resides in an interesting interdisciplinary space, somewhere between sociology, philosophy and economics. In his 1962 article, "The Economic Implications of Learning by Doing", Nobel-prize winning economist Kenneth Arrow clearly states the necessity for organizational practices that manage the learning process; the economics of KM are concerned with breaking down and quantifying this process. In *The Tacit Dimension* (1966), Michael Polanyi describes the concept of "tacit knowing", knowledge that deals with the implicit nature of human experience. Skill and action are considered tacit, while knowledge codified and transmittable through language is explicit. Polanyi's epistemological model serves as the fundamental principle of KM, distinguishing knowledge from the concepts of information and data. The sociological underpinnings of KM provide us with a sound basis for understanding 'knowledge' as a concept and its notably various manifestations, while also giving us a framework for making sense of how knowledge circulates within communities and through individuals. The seminal work of Emile Durkheim (1982) lends KM a primary concern with the "social facts"—the observable behaviours at the root of human interaction (50-59). Rather than relying on theory, KM is preoccupied with studying how people actually share, learn, and use knowledge. KM arose from these disciplinary cornerstones in the early 1990s, when an increased emphasis on the creation, dissemination and utilization of organizational knowledge in professional and scholarly literature identified a growing need for a systematic approach to managing information and expertise in firms. Laurence Prusak (2001) identifies three social and economic trends that make KM essential in any organization today: globalization, ubiquitous computing and "the knowledge-centric view of the firm" (1002). Prusak's description of globalization in particular emphasizes the necessity to stay current; information technology has resulted in a "speeding up" of all elements of global trade, as well as an increase in the "reach" of organizations (Ibid.). Academic libraries, no less than the multinationals, private agencies and firms, are affected

by this “speeding up” of the economy—which is equivalent to an ever-increasing output of information that demands sorting, managing and transmitting—and must satisfy the self-same need to remain current; perhaps not, as with firms, to increase revenue, but rather to continue providing a valuable and essential service to students and to increase its institution’s output of skilled and knowledgeable professionals.

Davenport and Prusak (1998) provide an invaluable resource for understanding the principle of KM in *Working Knowledge*, which characterizes knowledge as a “fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information” (5). In this definition, organizational knowledge is defined far more broadly than information or data, incorporating both of those concepts while also encompassing all of the unexpressed and inexpressible understanding of the individual. The definition puts Polanyi’s notion of tacit knowledge in a context that emphasizes the role that the implicit nature of human experience, skill and action must play within organizational learning. Thus, tacit knowledge and explicit knowledge are in a constant, fluid shift that represents the continual transmission of understanding, skills and information among individuals within the organization.

The challenge for knowledge managers is to map these two dimensions of knowledge as they exist within and around an organization, and process it into a form that can benefit the organization. Tapping into the intuitive understanding of a few skilled and experienced workers and formalizing that knowledge in order to increase the productivity of the business unit, for instance, would be a task typically suited to KM. The models for knowledge creation developed by Nonaka and Takeushi emphasize the importance of individuals and groups in the creation and transfer of knowledge (Nonaka, 1994; Nonaka & Takeushi, 1995, 57-58). They argue that both tacit and explicit knowledge are created through different interactions at the individual level (internalization, externalization) and at the group level (socialization, combination) (Nonaka, 1994, 18-20). This process of

knowledge creation is described as a “knowledge spiral”, reproduced in Figure 2.6. There are a number of tools and systems that facilitate these critical interactions; in particular, the use of Web 2.0 technologies to harness the power of collective intelligence has been recognized as a simple and valuable method for organizations to encourage the creation and dissemination of organizational knowledge (O’Reilly & Battelle, 2009; Grudin & Poole, 2010; Huh et al., 2007). Social media, then, is uniquely positioned to serve the goals of KM.

Thanks to the comprehensive body of literature and manifold frameworks supplied by KM, this study is provided the means to explore the use of social media, such as blogs and wikis, as a way of achieving the academic library’s goals. The essential purpose of KM is to systematize the technologies and processes involved in creating, mobilizing, sharing, and utilizing, or “leveraging” organizational knowledge (Baskerville & Dulipovici, 2006, 83). Since its introduction in the early 1990s, KM has become an essential concept for all organizations wishing to compete in an increasingly information-based society, because it addresses the importance of marshalling organizational information, skills, and expertise—also known as “knowledge assets” (Blair, 2002, 1022; Davenport et al., 1997, 8)—to be effective. As has already been stated, academic libraries are just as, if not more, concerned with the proper management of its ‘knowledge assets’ than other organizations. It is the goal of this research to determine whether or not social media are being used in the library’s management of such assets, and to gauge the perceptions of librarians as users of social media tools for knowledge sharing.

2.7. Social Media and KM

As I have stated previously, KM literature has a tendency to focus on internal knowledge sharing. This is no less true in its discussion of social media implementations. Current research of social media in KM includes, for instance, how enterprises use wikis for communication and collaboration (Grudin & Poole, 2010), internal project blogs for virtual teams (Grudin, 2006), or the implementation of an organization-wide internal corporate blogging community

(Huh et al., 2007). Occasionally, there are exceptions: Lee et al. (2006) discuss the corporate blogging strategies of Fortune 500 companies, including both internal and external blogs. Interestingly, in their analysis of the application of KM principles in academic libraries, Mavodza and Ngulube (2011) discuss the use of Web 2.0 as a way for the library to gather and share knowledge from their “user communities” (15, 23). This characterization of social media from a KM perspective aligns closely with the n-way information flow described by Xu et al. (2009). Their study identifies in particular the social tagging functionality of the sampled library’s OPAC as a feature that can benefit students, faculty and librarians alike (23). Similarly, Kim and Abbas (2010) consider Library 2.0 adoption in academic libraries from the lens of KM, and distinguish applications of social media as either “library-initiated” or “user-initiated” (Figure 2.4). While their conclusions indicate that user-initiated social media are not as popular in academic libraries as library-initiated, they are still valuable in the generation and dissemination of organizational knowledge (215-216). This suggests that the KM lens does include a broader definition of user, when it is applied to social media use in academic libraries.

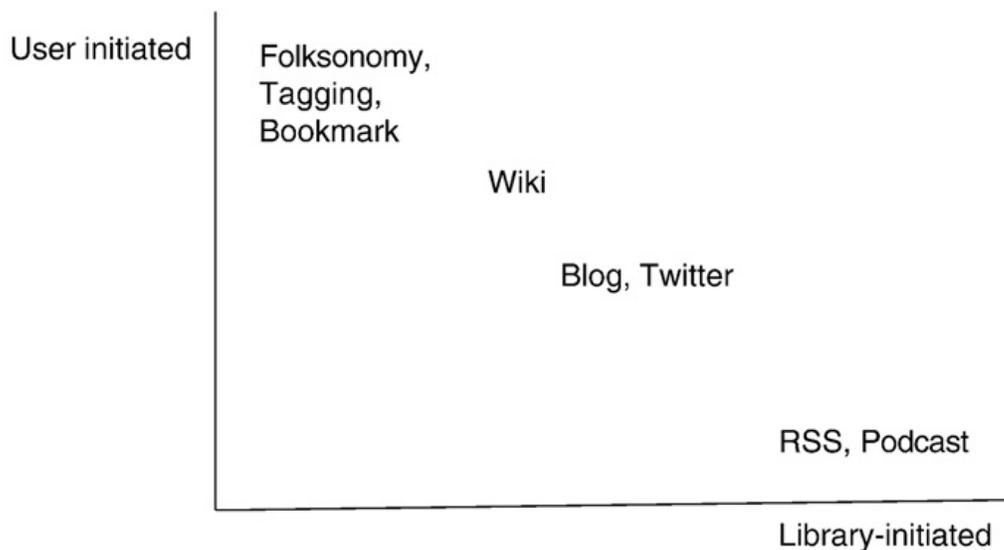


Figure 2.4. Kim and Abbas’ conceptual model of Library 2.0 functionalities, implying an intended audience for different social media for the purpose of KM (2010, 212).

2.8. KM in Libraries

As literature cited in the previous sections proves, it is not difficult to bridge the gap between KM theory and library practice. Academic libraries are uniquely positioned in today's knowledge economy, as post-secondary education and professional training become increasingly crucial for individuals to succeed. The responsibility of the academic librarian is to control and maintain access to critical materials for students attending their parent institution; in order to achieve this, internal networks for sharing, learning, and creating knowledge are required (Dong, 2008). In her paper "Using Blogs for Knowledge Management in Libraries", Elaine Xiaofen Dong identifies two goals that uniquely apply to academic libraries: first, to "convert the vast amounts of knowledge locked inside the minds of employees to explicit knowledge and make it visible, and to facilitate the access and utilization of the codified knowledge across the library", and second to "collect, preserve, and provide access to the records of human knowledge (library resources)" (3). In academic libraries, both of these goals converge at the point of service delivery, such as the reference desk. In order to be effective, the reference librarian must be able to access and apply the tacit knowledge of subject specialists in order to help students find and make use of library resources.

Dong's insight has proven important in the context of my research, since it justifies my approach to accessing the study population based on their involvement with reference service (i.e., the idea that the reference librarian or reference assistant is, by definition, a 'knowledge manager'). It also speaks to a common thread in library management literature that makes use of KM as an organizational concern (Rodriguez, 2010; Kim & Abbas, 2010; Branin, 2003).

2.9. Classifications of Knowledge Sharing

Now that the theoretical focus of KM and its relationship to social media and libraries have been explained, it is necessary for me to define precisely what is understood by "knowledge sharing" and how I apply it in the context of my research.

The exchange of knowledge through social media can happen in a variety of ways. It can be synchronous, meaning that it takes place in real-time, or asynchronous, meaning that it takes place at different times (Casey & Savastinuk, 2007, 79-81; Berry, 2011). Similarly, it can take place in the same physical space, as do face-to-face interactions (i.e., in the same office or work space), or it can happen in virtual space across long distances (e.g., between different library branches). Berry (2011) breaks down virtual (i.e., online) interactions into four categories: 1) same time / same place (STSP), 2) same time / different place (STDP), 3) different time / same place (DTSP), 4) different time / different place (DTDP) (189; Mittleman & Briggs, 1998, 256-263). I have reproduced these categories as a grid (what Mittleman & Briggs (1998) refer to as the “groupware matrix”), and placed examples supplied by Berry (2011) in relation to their occurrence in space and time:

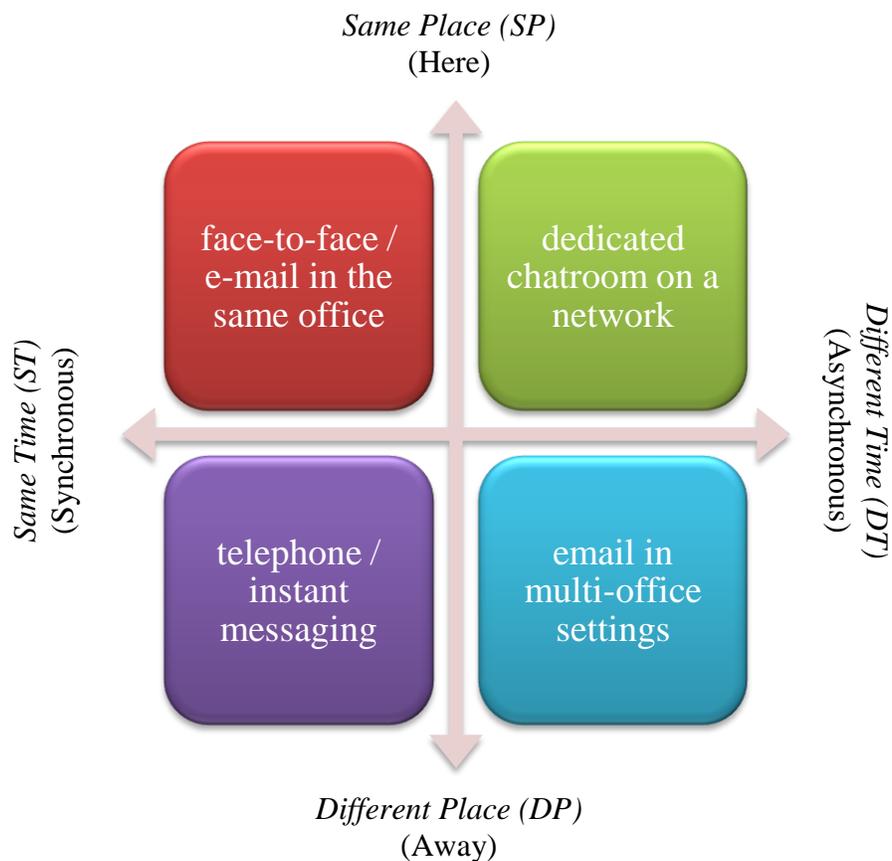


Figure 2.5. Examples of virtual interactions and their relationship to time and space according to Berry (2011).

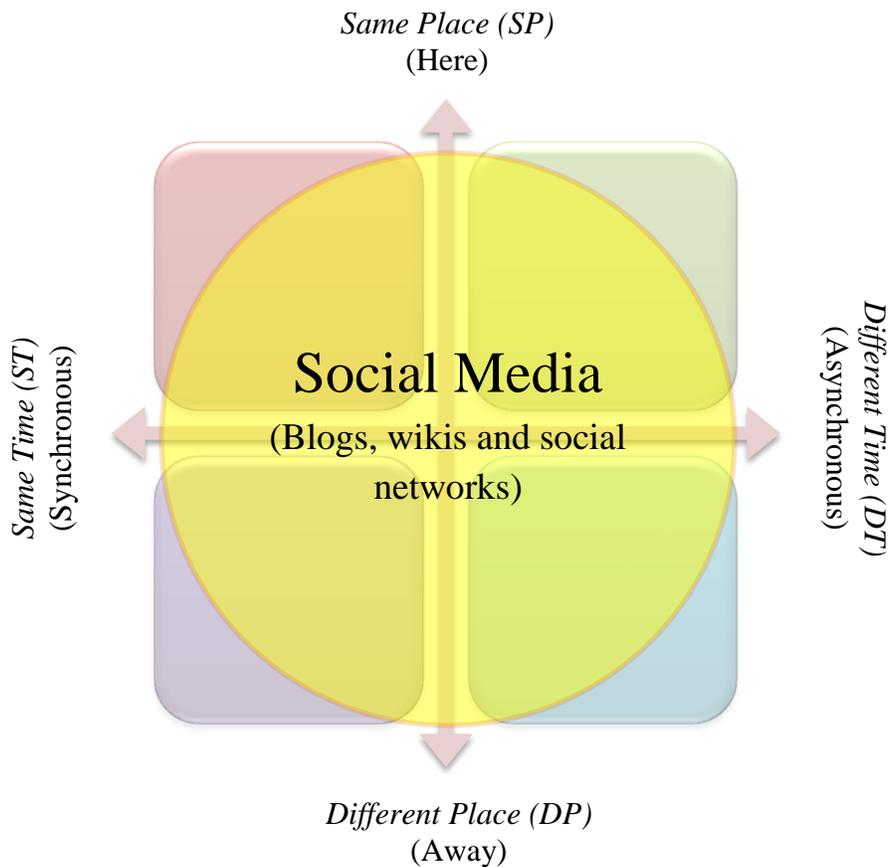


Figure 2.6. *The (assumed) relationship of social media to time and space in facilitating “anytime, anyplace”(ATAP) interactions between users. This assumption is based on the literature previously discussed in the above sections 2.2 (“Web 2.0”) and 2.3 (‘social media’).*

Berry’s examples draw on more established forms of online communication—the sort of technologies embedded in the knowledge practices of most workplaces, including the libraries sampled for this research. Evidently, specific social media implementations could just as easily be applied to the same grid, in order to understand how individuals use them in different ways. In addition to the four categories described, Mittleman and Briggs (1998) include a fifth type for “anytime, anyplace” (ATAP) interactions. They explain that this is not precisely a distinct category, but refers rather to “tools from the four cells of the groupware matrix that contain seamless interfaces, enabling their use anytime,

anyplace” (264). They suggest that ATAP interaction is the *ideal*, where organizational knowledge sharing and collaboration could be achieved through technologies that support all four categories. This could also benefit the sharing of both tacit and explicit knowledge, a fundamental preoccupation of KM. Social media should, in theory, facilitate all four classes of interaction to achieve ATAP (Figure 2.6). My research determines whether or not existing implementations of social media in libraries actually do so, according to the academic librarians interviewed.

Another way of understanding how knowledge is shared is to consider the function that it serves in relation to individuals and groups. Chu et al. (2012) describe such a classification of interactions in their study of SNS:

- one-to-many *knowledge sharing*;
- one-to-many *information dissemination*;
- one-to-one *communication*;
- many-to-one *knowledge gathering*.

They further define these categories as follows (4):

- *Knowledge sharing*: Librarians or users share information resources with others.
- *Information dissemination*: Updating the news and announcements from libraries.
- *Communication*: Aimed at individuals, conversations that happen between librarians and users, or among users.
- *Knowledge gathering*: Harvesting information from individual users for improving library services, academic research, etc.

Chu et al.’s findings suggest that more than 53% of interactions on libraries’ SNSs were one-to-many information dissemination (Ibid.). My research examines how academic librarians perceive their social media interactions, and if

organizational knowledge flows for them in the ways Chu et al.’s findings suggest (Chapter Six, “Discussion”).

A third way of understanding knowledge sharing originates from the KM literature, popularly referred to as “Nonaka’s knowledge spiral”. The four modes of knowledge creation proposed by Nonaka (1994) are socialization, externalization, internalization and combination. Nonaka argues that all four of these modes are required for the continued creation and dissemination of organizational knowledge. The spiral depicts this dynamic generative process mapped onto two dimensions: the epistemological dimension, which capture the state of knowledge on a spectrum between *explicit* and *tacit*; and the ontological dimension, which identifies the level of interaction in which knowledge creation and knowledge sharing occurs, i.e., between individuals, groups, or organization-wide (18-20; Figure 2.7).

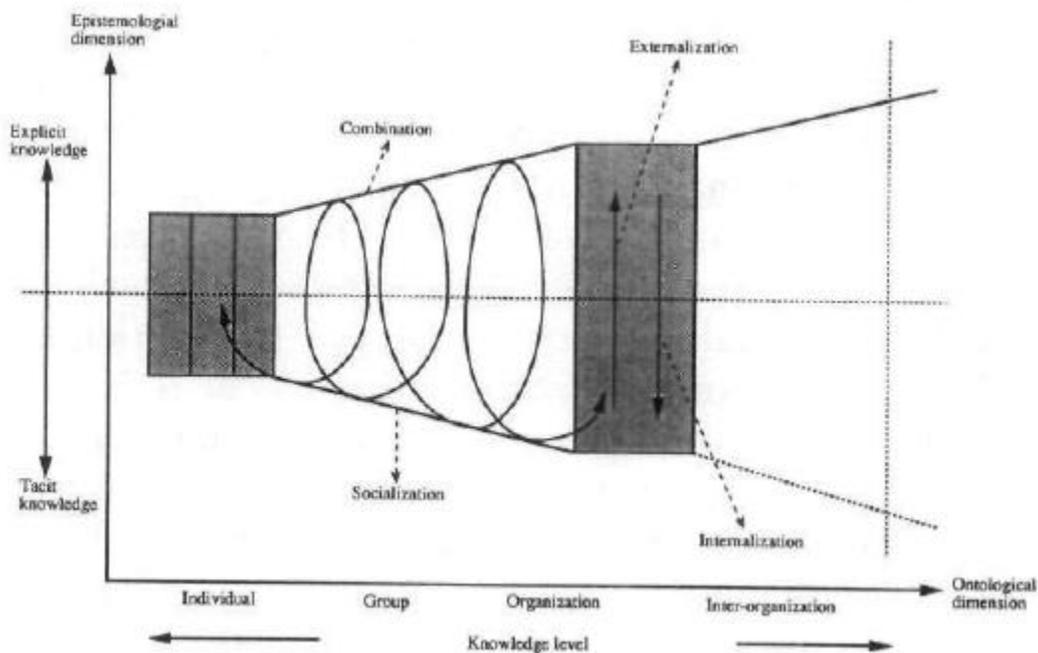


Figure 2.7. Nonaka’s *Spiral of Organizational Knowledge Creation* (1994, 20).

Essential to understanding this process in the context of social media use are two concepts related to “socialization” and “combination”. Nonaka defines

“dialogue” as a method of interaction that facilitates the sharing of tacit knowledge among individuals and groups, usually in the form of “metaphors” (or stories). “Documentation” is described as a trigger for combination, where existing knowledge is rendered explicitly. Social media can facilitate both of these functions. Still, Nonaka’s model poorly defines what motivates this movement of knowledge from different epistemological and ontological valences. In Chapter Six (“Discussion”), my research explores if and how these functions are observed in study results, determines if the current social media implementations can support knowledge creation as defined by Nonaka’s model, and examines the substantive theory produced by my research for a more detailed understanding of the forces that cause knowledge to *move*.

2.10. Diffusion of Innovations

While not related to KM, Diffusion of Innovations Theory can prove useful in any research that studies the emergence and use of technologies. Rogers (1995) explains that there are four elements of diffusion: (a) the *innovation* itself (i.e., social media, or a specific social media implementation); (b) *communication channels*, whereby a new idea (i.e., innovation) spreads (e.g., interpersonal channels, mass media channels); (c) *time*, used to measure the rate at which awareness of a new innovation spreads and is (or is not) adopted (or is ultimately rejected); (d) *social system*, or systems that exist in the environment where innovation is introduced. The social norms of an organization, for instance, are just as important in determining the success of an innovation (e.g., an internal blog implementation) as the objective efficacy of that innovation in fulfilling a particular function (26). Similar studies of social media use in academic libraries have applied innovation diffusion principles in the analysis of their findings (e.g., Rodriguez, 2010). My own research benefits from the inclusion of it as an analytical lens for determining the success of specific social media implementations (in Chapter Six, “Discussion”) as discussed by participants. Moreover, this study recommends innovation diffusion as a theory fully compatible with KM principles, for researchers seeking to extend this body of literature.

2.11. Communities of Practice

A critical concept that has been adopted in KM is the ‘community of practice’. This concept was first developed by Lave and Wenger (1991), who defined it as an “an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their community.” (98) More precisely, a community of practice is an informal network of exchange between practitioners where they engage in work-relevant knowledge building (Hara, 2009, 3). A community of practice develops around a particular profession, such as librarianship, legal or medical practice, or an activity like, for instance, instruction or reference work. A shared professional identity forms the basis for the community. The network of interactions between members that develops over time creates a fertile environment for a self-replicating process of informal knowledge sharing, or learning (Johnson, 2001).

Wenger (2007) identifies three essential characteristics of the community of practice, or CoP: (a) a shared domain of interest (e.g., academic librarianship); (b) the community (and its discourse), which represents the specific discussions and relationships between members; (c) the shared practices, which includes a “repertoire of resources: experiences, stories, tools, ways of addressing recurring problems”, etc. These three features of the CoP distinguish it from a more prosaic definition of ‘community’.

There has been some debate as to whether a CoP can be artificially “created” by organizations within established KM practice, or if it is something that emerges organically (Hara, 2006). When the concept was first proposed, a community of practice could not be created ‘artificially’, so to speak (Lave & Wenger, 1991). Since then, however, and as the concept has become more popular, the notion of intentionally designing communities of practice, particularly in electronic environments, has gained traction. In *Cultivating Communities of Practice*, Wenger et al. (2002) suggest that a community of practice can be nurtured or “cultivated”, implying that KM practice can facilitate the creation and development of one. I address the nature of this debate in greater

detail in Chapter Six (“Discussion”), where I explore CoPs in the context of my research findings about academic librarians and their personal, professional and organizational communities.

There are four distinct classifications of communities of practice, as identified by the *Encyclopedia of Communities of Practice in Information and Knowledge Management* (Coakes & Clarke, 2006):

1. Internal communities of practice, which exist entirely within individual organizations.
2. Communities of practice in network organizations, which span organizations that are linked through mergers, acquisitions, or by formal business partnerships.
3. Formal networks of practice, which are networks that span organizations but are not part of other formal relationships.
4. Self-organizing networks of practice, which are networks of individuals with ad hoc relationships and no formal ties.

For the purposes of this study, I am primarily concerned with the first classification, internal communities of practice, since I am looking at Grant MacEwan University Library and the University of Alberta Libraries as single organizations. One of the principal characteristics of this type of community is to support the activities of existing organizational networks, such as project teams, formal work groups or committees, and ad hoc networks (Coakes & Clarke, 2006). I am interested in determining whether or not a community or communities of practice exist that support the knowledge sharing practices of the organization and of the academic librarians more specifically. A secondary goal of my research, which seeks to understand the personal and professional knowledge practices of academic librarians and their use of and attitudes toward social media, examines if and how other types of communities of practice are manifested.

In addition to the four classifications of communities of practice outlined above, the notion of the *online* community of practice has emerged alongside the rise of Web 2.0. This idea stems from the desire of organizations to improve KM practices by intentionally designing and fostering communities of practice through a marriage with Web 2.0. An online community of practice may be defined as any of the above classifications, supporting many of the same aspects afforded by ‘analog’ communities of practice. Research suggests, however, that it tends to support the following attributes, which mirror the three characteristics of CoPs supplied by Wenger (2007): (a) it is composed of a group of professional practitioners; (b) it is made up of informal networks; (c) it provides a supportive culture; and (d) its members engage in knowledge building (Hara, 2009, 120). When compared with Wenger’s (2007) three characteristics described above, Hara (2006) emphasizes profession in practice more explicitly, but otherwise suggests that an online CoP should manifest in the same manner as a regular CoP. In Chapter Six (“Discussion”) I determine whether any of the social media implementations identified in results might indeed be considered online communities of practice, and if and how communities of practice more generally manifest among the studied libraries.

2.12. Summary

This literature review comprehensively examines the salient fields that inform my research. A discussion of communication and organizational knowledge in academic libraries provided an overview of the general bodies of literature my study engages with. From there, I proceeded to introduce Web 2.0 as the paradigm from which social media have emerged. I then provided definitions for the types of social media I address in my results, derived from existing literature. A survey of the literature on Library 2.0 and Academic Library 2.0 was then provided in order to situate my study in relation to an existing research gap. I then described the origins of knowledge management (KM) and its significance as a theoretical framing device for my research, followed by its relationship with social media and libraries. I concluded the review by providing the literary antecedents for three key theoretical concepts I use in my analysis of results:

classifications of knowledge sharing, innovation diffusion and communities of practice. These successive discourses represent a firm foundation upon which to build my research methodology, and ultimately structure my discussion of results in future chapters.

CHAPTER THREE: RESEARCH DESIGN

According to *The Sage Encyclopedia of Qualitative Methods*, the process of establishing a rigorous and compelling qualitative research methodology includes the following: (a) selection of guiding paradigm; (b) identification of research questions; (c) development of a formative conceptual model; (d) site selection, study population, and study sample; (e) topics, procedures, and tools for data collection; and (f) procedures for data analysis and interpretation (Schensul, 2008). The design of this study has adhered closely to this process to ensure that the methods and analytical approach used are appropriate to the study of the research problem.

3.1. Guiding Paradigm

The paradigmatic approach adopted by this study is essentially constructivist, following the assumption that individuals construct knowledge and experience through social interaction rather than acquire knowledge through an external objective reality (Constantino, 2008). This belief in a socially constructed reality informs the application of semi-structured interviews as the primary method for data collection and data generation, and the evaluation of data obtained using this method, explained in greater detail below. The approach used in this study is, more specifically, characteristic of social constructionism, as it is motivated by a concern for the politics of knowledge which explore the ways in which knowledge is generated and shaped by communities (Gergen, 2008).

The use of this paradigm to inform the research design is appropriate given the study's preoccupation with the creation and sharing of knowledge. The examination of participants' perceptions of how they interact with and through social media, and what—if any—roles social media serve within the community and work environment of the academic library is thus deeply tied to the epistemological and ontological views associated with constructivism.

The decision to use Grounded Theory (GT) as part of my methodology is closely related to my adoption of a constructivist paradigm. The application of GT approaches, particularly as defined by Charmaz (2002; Bryant & Charmaz, 2010) complements a social constructionist worldview. GT's "persistent interaction with data" demonstrates a built-in reflexivity that is essential in any qualitative study for the empirical understanding of a "basic social process" (Bryant & Charmaz, 2010). In this way, GT acknowledges the socially constructed role of the researcher as well as the social constructions of participants, both in relation to the process under study and within the research process. Still, GT is by no means the only possible approach that could be used to answer my research questions. In the conclusion of this chapter, after describing the operational details of this study's methodology, I will return to discuss the question of "Why Grounded Theory?" in the context of my research.

3.2. Research Questions in Design

Three questions guide the exploration of social media use in academic libraries undertaken by this study. Fourteen academic librarians were interviewed to investigate the following:

1. How are social media (in particular: blogs, wikis and social networks) being used in academic libraries for internal communication and knowledge sharing? What functions do they/can they support in this environment?
2. How do academic librarians perceive and use social media? What are the prevailing attitudes toward such technologies?
3. From a knowledge management perspective, do social media currently represent/create/facilitate communities of practice in academic libraries? Could they in the future, and if so, how?

In developing these questions, I relied on the four criteria for an effective social sciences research question described by Luker (2008, 51-52):

1. It must propose a set of relationships between concepts or variables.

2. Understanding those relationships help explain something important about social life.
3. It must permit a range of possible answers that can be empirically examined.
4. Properly answered, it must add to the existing scholarly discourse.

The key relationships with which my research is concerned are expressed in the questions above, including the connection between social media, knowledge sharing, and academic library practice, as well as the conceptual relationships between knowledge management, communities of practice and social media use. An exploration of the intersection of these concepts is valuable in explaining how social media are used for the particular function of organizational knowledge sharing in the academic library, and if such technologies could contribute to organizational knowledge practices in that environment and for that purpose. Empirical analysis of the data generated through in-depth interviews with participants is employed to answer these questions. The discussion produced in response to these questions and through engagement with the study's results will represent a substantive contribution to the current body of LIS research and the existing discourse in the field of knowledge management. In addition, the analytical approach described in Chapter Four ("Coding Process") and the findings of the research as they relate to current cultural technological practices will be of considerable interest to digital humanities scholars.

3.3. Conceptual Model

The conceptual model generated in preparation for this research identifies the growing popularity and application of social media for the benefit of groups and organizations. Chapter Two ("Literature Review") establishes this by discussing how Web 2.0 technologies have come to dominate the ways in which individuals access and share information. While academic libraries have begun to adopt these technologies to attract library users, the literature does not adequately

reveal if and how they are actually being used for organizational knowledge sharing.

An easily accessible means to access current organizational communication and knowledge sharing practices in the academic library is by studying how these technologies are manifested around library reference activities. The reference desk represents at once the library's principal point of contact with the external user, and the internal knowledge flows between the librarians who work there. Reference librarians also represent an informal professional community that surpasses organizational boundaries, sharing a common orientation to facilitating the research goals of academic library users, and often becoming embedded in particular disciplinary or faculty environments. With a primary function related to searching, sharing and generating information external and internal to the library/institution, it would be reasonable to anticipate that academic reference staff have engaged with social media within the context of their work. Since current research is not sufficient to support such an assumption, a study is required to determine what role social media play in academic libraries, and how academic reference staff perceive and use them.

KM and the concept of communities of practice provide a context within which such a study can be framed and understood.

3.4. Study Population

Two academic libraries have been chosen for this study. The first site selected was the library system at Grant MacEwan University, primarily an undergraduate and professional-degree granting institution. The second was the University of Alberta Libraries, a larger and more established research institution. The study focused on two branches within the University of Alberta Libraries specifically: Rutherford (Humanities and Social Sciences) Library and Cameron (Science and Technology) Library. Both universities are located in Edmonton, Alberta, Canada.

A total of fourteen interview participants were recruited; six staff members were from Grant MacEwan University Library, and eight staff members were from the University of Alberta Libraries (i.e., four from Rutherford Library and four from Cameron Library). Participants were selected initially within the context of two pilot studies associated with my courses. The first pilot study took place at Grant MacEwan University Library between May-August 2011 (i.e., ‘phase 1’). A recruitment email was submitted to a distribution list including all eighteen Grant MacEwan full-time and part-time reference librarians, and five participants were selected based on responses. The second pilot study took place at Rutherford Library between September-December 2011 (i.e., “phase 2”). A recruitment email was submitted to the library director, who then forwarded the email to the nine full-time librarians and one sessional librarian eligible to participate, and four participants were selected based on respondents and through a strategy of snowball sampling. A third phase of recruitment took place from April-August 2012 (i.e., “phase 3”), to expand the study sample. One additional participant was recruited from Grant MacEwan University Library via direct email. A recruitment email was sent to the seven full-time librarians and two public service assistants eligible to participate at the Cameron Library. Four participants were selected based on respondents, and through a strategy of snowball sampling. All participants interviewed through all three phases of recruitment were provided the same information letter describing the research study, with only the dates and site names changed (Appendix One, “Ethics Documentation”; Figure 3.1).

Recruitment procedures followed a judgment or purposive sampling model for the purposeful selection of information-rich cases within a relatively limited pool of eligible participants (Patton, 2002, 230; Bernard, 2000, 176). Several sampling strategies that fall within the rubric of nonprobability “purposeful” sampling (Patton, 2002) were used in the context of this study:

3.4.1. *Maximum variation (heterogeneity) sampling*

The purpose of this strategy is to capture and describe the central themes that “cut across a great deal of variation” (Patton, 2002, 235; Miles & Huberman, 1994, 27-28; Creswell, 2007, 126). Since my research deals with individuals’ subjective experience, such as a user’s familiarity and comfort level with computer technology and social software, and since a great deal of variation can be found even within the same work environment, professional orientation and age group, this strategy proved particularly effective. Initially, the variation found even within the site-specific sample was perceived as an obstacle; use of this strategy for sampling makes that observed variation a benefit of the study, particularly when findings from both sites are compared and combined to determine common themes. This strategy yields two kinds of findings, according to Patton (2002): (1) high-quality detailed descriptions of each case, and (2) important shared patterns that cut across cases (234-235). The latter proved particularly useful in the analysis of results to answer the study’s research questions.

3.4.2. *Theoretical sampling*

A strategy derived from Grounded Theory methodology, theoretical sampling is “the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges” (Glaser & Strauss, 1967, 45). This process was particularly useful since the goal of the study was not simply to examine a culture or community, but the use of particular technologies within a particular conceptual frame (i.e., KM). In this sense, one of the outcomes of the study is to generate a knowledge-centric model of social media use. Miles and Huberman (1994) also associate theoretical sampling with “within-case sampling”, where the sample is *nested*: for instance, this study could be seen as two *cases* of university libraries, or several *cases* of university library branches, in which individual persons are sampled, and later analysis can be scaled up or down at will (29). They point out that this type of

sampling is *theory-driven*, since the construct takes shape as different instances and conditions are studied iteratively (Ibid.). Theoretical sampling proved useful since it provided a strategy for sampling based on operational, “real-world” examples of social media use (e.g., Grant MacEwan librarians’ uses of the LIP blog) (Patton, 2002, 238-239). The decision to recruit from Cameron (Science and Technology) Library could also be considered a form a theoretical sampling, since it was selected based on the disciplinary divide between it and Rutherford (HSS) Library. This method of sampling also emphasizes the iterative and simultaneous nature of the inductive analytic method adopted by my research, which influenced the phased approach taken to participant sampling.

3.4.3. Emergent Sampling

Building upon the strategy of theoretical sampling, emergent sampling allows for the flexibility to adapt the sampling method when following data collected during fieldwork (Patton, 2002, 240). This strategy requires a continual engagement with the data in keeping with Grounded Theory’s constant comparative method. My research cannot follow a fully emergent approach to qualitative research (Ibid.), existing as it does within the scope of what is reasonable for a Masters’-level thesis and required to fulfill ethical and administrative requirements that pre-determine variables of the research—such as recruitment strategies and sample size, described below. However, my research did allow for a review of the sampling method based on initial sweeps of collected data, which allowed me to refine my approach to collect data based on emergent themes (i.e., selection of Cameron Library as the final recruitment site and adaptation of interview questions based on sample site).

3.4.4. Snowball sampling

More of an operational method than a conceptual approach to sampling, snowball sampling is a strategy that permits recruitment based on the knowledge of key informants within the studied community (Patton, 2002, 237; Miles & Huberman, 1994, 28). My study made use of snowball sampling particularly within the second and third phases of interviews, designed to expand the sample

size achieved in the initial pilot studies. Respondents to the initial call for participants shared information about (and, sometimes, with) other potential participants that represented information-rich cases for the study.

3.5. Sample Size

The section above inevitably leads to a question that every researcher must ask, when relying on the collection of empirical data for their research: what constitutes an appropriate sample size? In his book *Qualitative Research and Evaluation Methods*, Patton (2002) emphatically states “there are no rules for sample size in qualitative inquiry” (244). Despite this, a significant portion of the methodological literature is devoted to establishing prescriptions for sampling in qualitative research (e.g., Bertaux, 1981, 35; Morse, 1994, 225; Guest et al., 2006, 61-62; Mason, 2010; Creswell, 2007, 126-128). Suggested sample sizes range widely based on the paradigmatic orientation of the study, theoretical framework and research objectives. The most important principle in determining sample size for purposive sampling in qualitative research is that of *theoretical saturation*, which itself is a contested concept. This concept is defined as the point at which “no additional data are being found whereby the (researcher) can develop properties of the category. As he sees similar instances over and over again, the researcher becomes empirically confident that a category is saturated” (Glaser & Strauss, 1967, 65). Theoretical saturation is necessary in order to meaningfully generalize findings across a population. However, Strauss himself states in *Basics of Qualitative Research* that saturation is “a matter of degree”, and that if one looks long and hard enough, one always finds additional properties or dimensions (Strauss & Corbin, 1998, 136). In their study to determine the degree of saturation and variability in the documentation of 60 in-depth interviews, Greg Guest, Arwen Bunce and Laura Johnson (2006) justified their experiment by stating that, “although the idea of saturation is helpful at the conceptual level, it provides little practical guidance for estimating sample sizes, prior to data collection, necessary for conducting quality research” (59). Their study reveals that they were able to develop a fairly complete and stable codebook after analyzing only twelve interviews, and that for high-level, overarching themes six interviews would have

been sufficient to “enable development of meaningful themes and useful interpretations” (78). It is based on these findings, and on the limitations associated with producing a study design appropriate to a Master’s-level thesis, that the sample size of fourteen participants for my study was ultimately determined.

I will revisit the problematic concept of theoretical saturation later in this chapter, when I discuss my approach for determining if and how saturation was achieved in my research. A higher-level reflection on the notions of saturation and sample size in qualitative research also takes place in section 7.4.1 (“Non-Limitations”).

3.6. Research Ethics

As described in Appendix One (A1.1), this research received ethics approval at each stage of data collection, and was reviewed by the research ethics boards (REBs) at Grant MacEwan University and at the University of Alberta. The design of the study was reviewed and approved by both REBs for its adherence to the Tri-Council Policy Statement (TCPS 2) set out by Canada’s three federal research agencies (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, 2010). The TCPS serves as a guideline for the ethical conduct of research involving humans.

The TCPS relies on three complementary core principles: 1) respect for persons, 2) concern for welfare, and 3) justice (Canadian Institutes of Health Research, et al., 2010, 8-11). It is on the basis of these three principles that I—and the Grant MacEwan and University of Alberta REBs—weighed the legitimate requirements of the research against the potential research-related harms to participants, and determined what sort of protections were needed for participants in this study. Given that this research is qualitative, grounded in the social sciences and posed little to no physical risk to participants, foreseeable “harms”, as defined by the TCPS (22), were primarily limited to the social and psychological in the manner that it relates to issues of privacy and confidentiality.

The study closely adhered to the informed consent process outlined by the TCPS (27-45), in which all participants were provided an information letter describing the research and its goals, were given the opportunity to inquire further about the nature of the study, and were required to review and sign a consent form in order for an interview to take place. The nature of protections afforded to participants (e.g., the assignment of pseudonyms to remove real names as direct identifiers; the potential for identification through indirect identifiers such as place of employment and job description; the right for the participant to withdraw from the study) and that participation was entirely voluntary were also explained to participants before they gave documented consent. In this way, “free, informed and ongoing consent” was ensured by preserving the voluntariness of participation, providing full disclosure of all information necessary to make an informed decision to participate, and keeping participants apprised of any changes to the risks or potential benefits of the research (it is worth noting here that no such changes took place; participants, however, were notified and invited to hear findings when it involved their data, such as with Forcier, 2012b, a conference paper delivered at Grant MacEwan University on preliminary findings of the research). It is worth lingering on two ethical considerations in the context of “informed consent” as examples of the kind of deliberation that took place in the ethical conduct of this study. The first relates to confidentiality; in designing the study, it became clear that, while it was certainly possible to assign pseudonyms as a protection for participants, the characterization of work-related responsibilities (i.e., generalized job descriptions), communities and specific libraries were necessary to the dissemination of my research in order to provide sufficient context to permit the transferability of findings. As indirect identifiers, these posed a potential risk to the anonymity of participants such that colleagues, co-workers and managers examining my research might conceivably identify them; in order to maintain informed and voluntary consent, this risk was made clear to each participant before they signed the consent form. In addition, discretion was used in describing particular work environments that were notably insular, such as the satellite campus libraries at Grant MacEwan University, to

prevent the unnecessary sharing of such data. The second consideration arises from the occasional use of intermediaries in recruitment, as described in section 3.5, which posed the potential risk of “undue influence” (28-29) to the voluntariness of consent. In certain cases a manager or director served as intermediary to send out recruitment messages to potential participants, or in the application of snowball sampling. This had the potential to apply pressure on some individuals to participate. This risk was alleviated by ensuring that all participants were directed to contact me directly for information about the study, and through the repeated emphasis on the voluntary nature of participation throughout the consent process. As such, the undertaking of this research successfully upheld the “value of human dignity” represented in the TCPS’s three core principles to maintain free, informed and ongoing consent throughout the research process.

The considerations noted above are merely examples from a host of ethical issues tackled in the design of this research. The TCPS proves valuable in highlighting other important considerations, such as multi-jurisdictional research (i.e., the need for REB approval from both Grant MacEwan University and the University of Alberta, identified in section A1.1), ethical conduct in qualitative research (i.e., notably issues determining appropriate sample size and transferability, discussed in sections 3.5 and 3.9), and conflicts of interest (discussed in greater detail in section 7.3, “Limitations”). This research relied on the TCPS as a guideline for maintaining a high ethical standard throughout the research process.

3.7. Data Collection

Data collection was achieved through the use of in-depth, semi-structured interviews, conducted in three separate phases with participants from two

academic libraries (Figure 3.1).

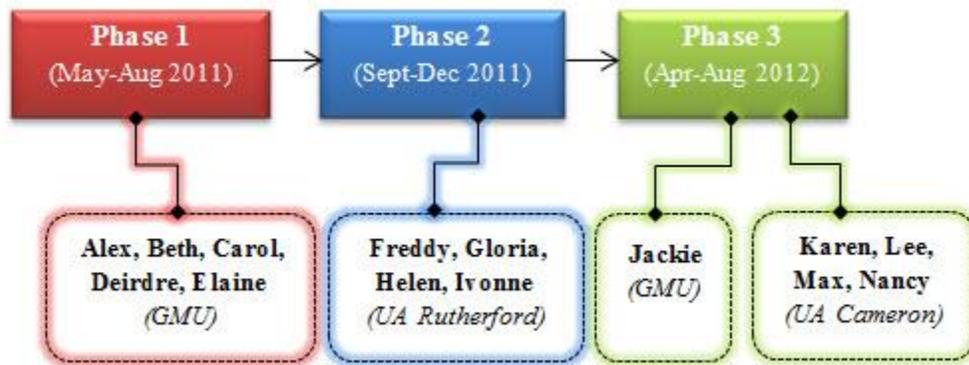


Figure 3.2. Phases of recruitment/data collection by study site and number of participants. Participants were numbered from 001 to 014, in the order in which they were interviewed.

All participants were interviewed using a loose interview script which included five sections of questions or topics (Appendix Two, “Interview Guides”). The first section included questionnaire-type questions used to assess the participant’s roles and responsibilities within the library, as well as their age and basic technical skill. Then participants were provided with Lave and Wenger’s definition of a “community of practice” and asked to explain if such a system exists within the library, and describe how it is manifested in practice. The following section asked participants about what modes of communication they use to share information within the library; their responses provided a basis for understanding how organizational communication takes place in the library, and where social media tools are positioned within that scheme. Questions regarding each participant’s use of social media in both at-work and at-home contexts were then explored in-depth to determine if and how social media are used for knowledge sharing. These questions also helped to determine participants’ perceptions and attitudes toward social media and Web 2.0 technologies, in the organizational context as well as in other aspects of their lives. Questions pertaining to the use of social media outside the organizational context were used as a means of gauging the participant’s familiarity and comfort level with Web 2.0. Finally, The fifth section, contingent upon the identification of a particular

social media tool unique to the work group, asked questions gauging the participant's adoption of the tool using the principles of Diffusion of Innovations Theory (Rogers, 1995; Rodriguez, 2010). This section of the interview script was only used consistently in the pilot study with the Grant MacEwan librarians, since the Library Intranet Portal (LIP) blog was identified prior to the interviews as a knowledge management tool common to the reference librarians working at the library. The section was only used in later phases when a similar social media tool was identified through dialogue with the participant within the frame of the interview. Interview questions can be reviewed in Appendix Two ("Interview Guides").

It should be noted that, while the broad sections and design of the interview questionnaire remained the same for all three phases of interviews, the script was revised in order to be more flexible, following the first phase of interviews (with Alex, Beth, Carol, Deirdre and Elaine); this was achieved by providing a catalogue of potential questions or prompts rather than a prescriptive list of questions to be posed sequentially (Appendix Two, "Interview Guides"). The sequence of sections remained the same so that the overall structure of interviews and treatment of concepts was unaltered, but this added flexibility allowed me to build upon the themes that had emerged with the first pilot study results, and pose questions as they occurred naturally, encouraging a more conversational tone. This resulted in slightly longer interviews with the University of Alberta Libraries' participants (i.e., Freddy, Gloria, Helen, Ivonne, Karen, Lee, Max and Nancy), as well as the sixth participant recruited from Grant MacEwan Library (i.e., Jackie).

The length of interviews ranged from thirty-five minutes to a hundred minutes. Most questions in the interview were open-ended, encouraging a conversation around a topic or theme to take place. Appropriate prompts were built into the interview design to facilitate dialogue. The first three sections supplied sufficient context to support targeted questions in the fourth section, which focused on social media use. Besides questions that extracted demographic

data, questions were designed to elicit information about the attitudes and experiences of participants with regard to their understandings of knowledge sharing and community in their work at the library, and the role social media play practically within the organization and in their lives in general.

Analysis of the data collected during the first two phases began in early 2012 (i.e., interviews with Alex, Beth, Carol, Deirdre, Elaine, Freddy, Gloria, Helen, Ivonne), allowing me to incorporate emerging themes into follow-up questions directed at participants in the third phase of interviews (i.e., Jackie, Karen, Lee, Max and Nancy, participants for the final five interviews completed in April-August 2012). This early analysis also provided sufficient evidence that changes to the interview guide between the two initial pilot studies had not led to inconsistencies or informational “blind spots”; a concern was raised by the thesis committee at the time that any evidence of missing information or inconsistency in the application of interviews might require follow-up interviews. No such inconsistencies were found in analysis, however, and thus no follow-up interviews were required. In order to check for consistency during this early analysis, I made sure that questions about personal and organizational use of social media had been answered by all participants, and verified this through the later examination of codes. The different levels of analysis are discussed in greater detail in the next section.

This approach to data collection resulted in an information-rich set of fourteen cases: six from Grant MacEwan University Library (i.e., Alex, Beth, Carol, Deirdre, Elaine and Jackie), four from Rutherford (HSS) Library (i.e., Freddy, Gloria, Helen and Ivonne) and four from Cameron (Science and Technology) Library (i.e., Karen, Lee, Max and Nancy; Figure 3.1). The third phase of interviews (i.e., with Jackie, Karen, Lee, Max and Nancy) also proved useful for evaluating the method of data collection by exploring transformations that took place at the different sampled sites since the previous interviews. Such transformations are occasionally addressed in the results (Chapter Five, “Results”). Data collected in the third phase also helped contain the issues of

validity and interpretation elaborated by Guba and Lincoln (2005) who indicate that validity in constructivist research is derived from community consensus regarding what is “real” and meaningful, representing a form of “interpretative rigor” (197, 205-208; see also section 7.4.1 “Non-Limitations”). It is thanks to the data collected at this stage that I was confident my findings were “sufficiently authentic” (i.e., “isomorphic” to the reality of academic libraries, and trustworthy enough to act on the implications of my findings) (Guba & Lincoln, 2005).

All interviews were one-on-one between the participant and myself, and took place in a quiet location easily accessible to participants. Interviews were audio-recorded and subsequently transcribed; both audio and text files are stored on two hard drives, protected by encryption and backed up to prevent loss of data. Print copies of transcripts, used for note taking and reference, were kept in a locked file cabinet.

3.8. Data Analysis

Transcription and the subsequent analysis of textual data occurred in two forms. First, during the process of the two pilot studies, repeated listening and selective transcription of each interview was conducted, followed by a high-level categorization of identified themes. This process included the activities of *classifying*, *conceptualizing* and *memo-ing*, the initial stages of open coding described by Corbin and Strauss (1998, 101-121). It is important to emphasize that this level of coding is not a line-by-line analysis, but an examination at the level of the document that asks, “What is going on here?” and “What makes this [interview] the same as, or different from the previous ones?” (Ibid., 120). A preoccupation with how participants frame individual concepts dictated the way themes emerged and were categorized, rather than starting with a pre-conceived list of possible themes that interview content might fit. Rather than starting from a hypothesis that must be tested, this approach followed the Grounded Theory model of generating theory inductively from the words of the participants themselves (Glaser & Strauss, 1967; Corbin & Strauss, 1998). This minimized any bias I might have applied in my analysis based on assumptions or

preconceptions about library practice and social media use. This initial sweep of the data was used to develop a first iteration of thematic categories, and to pinpoint key issues that recurred across the set as emergent themes. This level of coding did not use any special software, but instead took the form of notes or memos associated with excerpted sections of the transcription, either electronically or as marginalia on printed hardcopy. Notes were subsequently tabulated in spreadsheets based on the major themes identified for easy reference, and to be included in written reports of preliminary findings (a requirement of the two courses associated with the first two phases of recruitment previously mentioned, and which also facilitated two conference presentations (Forcier, 2012a; 2012b)). Basic demographic data collected in interviews were also included in this analysis (e.g., Appendix Four, “LIP Data Tables”).

Following the completion of the second round of interviews, a more detailed coding began using NVivo 10, a qualitative data analysis software package. Multiple rounds of coding took place, first to develop the codebook to its full extent, and then to apply the codebook to the entire data set. This iterative process for qualitative coding relied on a model of knowledge organization adapted from Given and Olson (2003). Based on the reported experiences of previous thesis research using the same approach (Reed, 2010), coding relied entirely on what was found in the interview transcripts, rather than a pre-developed list of key themes. Abductive reasoning, or “inference from observed facts” (Richardson & Kramer, 2006, 499), was applied based on the inductive observations derived from interviews (Bryant & Charmaz, 2010, 14-16; Peirce, 1955, 150; I discuss the concept of ‘abduction’ and its relationship to Grounded Theory in Chapter Four, “Coding Process”, section 4.5). The use of a journal as a reflexive method, in the form of memos saved within NVivo, facilitated this purpose. This was done to avoid the pitfall of making deductive assertions not grounded in the data, and to provide a critical layer to the analysis that addresses any potential bias or intellectual blind spots. Both the coding in NVivo 10 and the journal, and the approaches I adopted in the use of both, are explained in the next chapter.

3.8.1. Inter-Views

As a resource on qualitative methodology, Steinar Kvale (1996) is essential, if for no other reason than for his systematic deconstruction of interviews as a qualitative method. The interview, he explains, is a form of knowledge sharing in which knowledge is *created* between the two (or more) participants in a conversation (296). But the construction of knowledge does not end when the interview ends and the researcher switches off his recorder. It continues through the researcher's interpretations, through his reports of the interview, in conversations with other researchers about his findings (Ibid.; Figure 3.2). The "inter-view" can be perceived in multiple ways; Figure 3.2 depicts a series of faces in conversation, but you can also choose to perceive the vases formed between faces—metaphors for the knowledge constructed between interviewer and interviewee, between the researcher and his audience. "There is an alternation between the knowers and the known, between the constructors of knowledge and the knowledge constructed." (15)

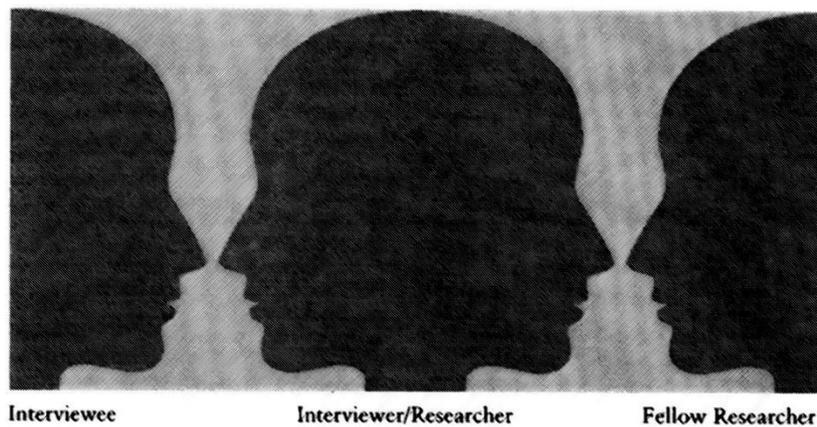


Figure 3.2. *Knowledge construction through the interview and the research conversation (Kvale, 1996, 280).*

Earlier in this chapter, I described the guiding paradigm of my research methodology as social constructionist. This, in part, is a reflection of my engagement in this research with Grounded Theory principles (further explained

at the end of this chapter). It is also, just as importantly, the source of the interpretivist framework applied in the reporting of results in Chapters Four and Five. In this way, the process of knowledge construction that began with interviews continues with the document you now hold in your hands (or, just as likely, perceive on your screen).

3.9. Theoretical Saturation

In response to the literature on theoretical saturation and the question of sample size posed earlier in this chapter, theoretical saturation for the goal of this research (i.e., to explore the research questions posed at the outset in order to develop an emergent substantive theory) was, in fact, achieved. This is proven by the recurrence of themes observed in the analysis of interviews. Some variation in the codebook took place when analysis began on interviews from each new site, but by the eighth interview all coding categories had been established, and only minor revisions were made to the codebook after that point. As the next chapter will discuss, the iterative process of qualitative coding and the use of annotation served as a method for intra-coder reliability, ensuring that all data relevant to my research questions were being appropriately and consistently captured. In this sense, the data collected for this study proved more than sufficient to achieve my research goal.

That being said, there are limitations inherent in this study, which I have addressed in the final chapter (section 7.3, “Limitations”), and which speak to the material challenges faced in the design and analysis of this study. Moreover, there were purposeful decisions made in the research design that strengthen this study’s approach while presenting important avenues for future research, and which further speak to the question of saturation and the information that can be derived from in-depth, qualitative interviews (section 7.4.1, “Non-Limitations”).

3.10. Why Grounded Theory?

A number of methodological approaches were considered in framing this study. A case study approach could easily have been applied in the context of this

research, particularly from a cross-case analysis perspective (Flyvbjerg, 2006; Miles & Huberman, 1994, 172-205). Case studies are effective in the analysis of a complex issue through the in-depth study of a practical example. Indeed, the context of both of the chosen study sites could be viewed as separate cases, and even the participants and the variance that exists between each one's socially constructed experiences would be amenable to a re-definition as individual cases. The Grant MacEwan Library's LIP blog, certainly, as a construct provides a practical, 'real-world' example of a social media tool in the academic library. Similarly, hermeneutics as a methodology could have been used in this research, particularly in exploring the interaction between the participant and technology, and the participant and their perceived professional community. The epistemological concepts of tacit and explicit knowledge, and their associations to Heidegger's hermeneutic circle and the ways in which one's subjective experience of an object in the world influence one's understanding of it might prove quite valuable in a study of social media use (Freeman, 2008). Ethnography, as the study of a group or culture, and so well established in the social sciences, could have provided a firm foundation from which to tackle this study's research questions. Critical ethnography and its preoccupation with the interpersonal would also have been an approach that could have informed this research, particularly in the way it makes use of disjunctures between the participant's (source's) perspective and the researcher's (target's) perspective as 'rich points' that can be abductively examined for underlying assumptions about truth claims. Such an analysis would provide an extremely information-rich set of data about how social media are perceived.

While elements of all of these are present in the design of my research, I made a conscious decision to base this study on Grounded Theory (GT) principles. It is essential for me to emphasize that I am not relying on GT simply as a prescriptive method for analysis, but rather as a keystone for creating my own theoretical framework. Using GT in this way provides three distinct advantages: (1) its dual meaning as both a method and a result moves my study beyond the phenomenological and sets before it the objective of generating an emergent

theory about how social media are used in academic libraries; (2) its engagement with the data and iterative approach to analysis that provides built-in reflexivity, particularly when a constructivist social knowledge paradigm is employed; (3) its focus on a “basic social process” (Glaser, 1978, 106; Glaser & Strauss, 1967, 2-6; Bryant & Charmaz, 2007) represents an optimal characterization of the issue at the heart of this study. While my research deals with academic librarians’ attitudes toward social media, what it is most intent on capturing is the *process* of how knowledge is shared within the group (i.e., academic libraries), and if and how the process is instantiated through social media tools.

3.11. Summary

This chapter began by establishing the conditions for a rigorous and compelling research methodology. I then proceeded to satisfy those conditions by systematically addressing each one. First, I selected social constructionism as a guiding paradigm, and explained why it was appropriate for my research. Then I identified my research questions, and outlined how they met the criteria of an effective research question for qualitative research (Luker, 2008, 51-52). Next I described the conceptual model that inspired this study and reaffirmed the goals of my research. In the next section I gave all the relevant details regarding the study sample, including the different sites sampled and why they were selected, sampling procedures employed and rationale for employing them, which in turn led to a discussion of what constituted appropriate sample size in the context of my research. This was followed by the procedures for data collection, which included a chronology of the three phases of interviews that took place, a description of the interview process that included the typical structure of interviews, and methods employed to keep all collected data secure. In the next section, I described the basic approaches used for analysis and interpretation of results, such as open coding of interviews at the document-level, followed by a more detailed line-by-line coding of all interview data, and what considerations affected my decisions about how to proceed. I revisited the question of theoretical saturation by explaining how saturation was achieved and determined during the analysis of interviews. I concluded the chapter by explaining how Grounded

Theory informed my research in the formation of my theoretical framework, and not merely as a method of analysis.

In the next chapter I will delve more deeply into the analysis of results by describing the coding process. Chapter Four is somewhat anomalous, in that it diverges from the primary focus of my research to delve more deeply into the methodological implications of my analytical approach. It does, however, contribute to the reader's understanding of how results were achieved, and should prove especially valuable on its own merits as a study on method. As mentioned in section 1.6, this research maintains a secondary goal of developing a road map for new researchers undertaking qualitative research. The next chapter achieves this goal by explaining the rationale behind my analytical approach, the approach itself, and through the autoethnographic study of my research journal which reports on the personal and epistemological considerations of conducting qualitative analysis.

CHAPTER FOUR: CODING PROCESS

This chapter provides an in-depth description of how analysis of the interviews took place, and how results were obtained from interviews. The inclusion of such content is inspired by a noted lack in existing qualitative methods texts that provide examples for how researchers should undertake the organization of knowledge (Given & Olson, 2003). The process of conceptual categorization, or qualitative coding, in particular, is a ‘missing link’ in the literature on qualitative methodology, as it is rarely addressed in detail except in a select few GT methods texts (e.g., Strauss & Corbin, 1998; Clarke, 2005). Even then, as in the case of Clarke (2005), the ontological positions that inform coding strategies and the strategies themselves (i.e., situational mapping) are so specific as to restrict their usefulness for researchers hoping to find a basic set of principles to follow.

As a secondary component of the thesis, this chapter represents a preoccupation with the implications of my research methodology, generally, in my approach to organizing knowledge derived from interviews, and specifically in the use of computer-assisted qualitative data analysis software (CAQDAS). In this way it expands on the ‘nuts and bolts’ details of applied research methods of the previous chapter, while also presenting a roadmap for new researchers seeking advice on how to undertake similar qualitative analysis. While the following sections will inform discussion of findings in later chapters, it should also be read on its own as a study on method.

The next section will describe the theoretical value of this chapter, as an example of GT-based analysis. The rest of the chapter is separated into roughly three parts: the first part will describe my research in the context of Given and Olson’s knowledge organization (KO) model (2003), and will contribute to their research by adding my own ontological-relational model for information retrieval in qualitative coding. The next will describe in practical terms the development of

the codebook, and the various considerations and outcomes it engendered—such as the specific relationships of conceptual categories with my research questions, the concepts of process and structure as integrated elements of coding, and the use of linking, annotating and memo-ing as functions of coding. This part also includes Table 4.1, which breaks down the parent-level categories of my codebook. The third and final part will include the rationale and results of my reflexive method of journaling, reported as a form of autoethnography (i.e., a methodological strategy that connects the autobiographical to a particular cultural or social process or practice), and providing conclusions on what new researchers should consider when undertaking qualitative coding and using CAQDAS.

4.1. Value and Context

The techniques applied in the coding process rely primarily on Strauss and Corbin's *Basics of Qualitative Research* (1998) as a guideline. This is appropriate given the authors' use of GT principles. As a methods text it is also valuable to my research, since it provides a detailed explanation of approaches to the process of variable categorization and data coding—an essential part of analysis most methods texts tend to gloss over (Given & Olson, 2003, 159). This chapter serves as a case example of GT-based coding, and should prove valuable for new researchers seeking more information on the application of Grounded Theory in their analysis.

4.2. Knowledge Organization (KO)

Balance lies at the heart of the knowledge organization (KO) model (Given & Olson, 2003). While the guiding principle of KO is relevance to the research problem, achieving optimum relevance in the analysis—and, ultimately, the results—requires a careful balancing act between specificity and exhaustivity, precision and recall. Too much or too little attention to these factors can lead to inconsistencies in the analysis, which will affect the validity of results. “Relevance” is defined as information gathered in the coding process that contributes to answering my research questions (160).

4.2.1. Coextensiveness

Given and Olson (2003) liken qualitative coding to the LIS concept of “controlled vocabulary” (162). When I develop a set of codes or categories based on themes that emerge from my interview data (i.e., transcripts), I am essentially creating a hierarchical taxonomy or index for the retrieval of information. “Coextensiveness” refers to the area that my coding covers, and how that area is divided into categories that best reflect my research questions. Thus, the creation and definition of thematic codes must be coextensive with the concepts represented in my research questions, in order for me to be able to retrieve relevant results from the data (163). My research questions evoke a number of key concepts: social media (blogs, wikis and social networks), KM practices, academic libraries as organizational environments, use of social media in academic libraries, perceptions of academic librarians toward social media and KM practices, communities of practice that exist within and around academic libraries. My codebook needed to reflect this; the correlation between my research questions and my conceptual categories depicted in Table 4.1 is an example of how I made sure that my coding was coextensive. Maintaining relevance through coextensiveness is not an easy task in GT research (171); the inductive method of GT requires that I let themes emerge from the data, rather than impose my own upon them, and deciding to restrict coding runs the risk of missing relevant emerging themes. This only re-emphasizes the need for balance.

I discuss my approach to coding inductively as well as the coverage of my analysis later in this chapter.

4.2.2. Specificity

The need to be specific in my coding scheme speaks to the precision of the results I obtain from it. Specificity in my coding can mean the level of detail in the controlled vocabulary (i.e., the number of hierarchical levels defined), and it can mean the way that I apply it to the data (i.e., I code all references to a given concept or theme as specifically as possible, e.g., “LIP” instead of “blogs”). The more specific my coding is, the more precise my results will be. Precision

measures how much of the information retrieved in a search is relevant compared with how much is irrelevant (163; Cleverdon, 1972). ‘High precision’ means that all the information retrieved in a search is relevant. ‘High specificity’ means that the terms I use in my coding are “finely grained”, using detailed levels of categorization (Given & Olson, 2003, 163).

My codebook might be considered as having ‘low specificity’, because it never has more than two levels of categorization, and while some codes conceptually appear to be mutually exclusive (e.g., “informal training” and “formal training”), I was careful not to assume that this was actually the case. Indeed, formal training and informal training, as an example, commonly co-occurred with “community of practice”, a surprising that warrants further research. The problem of specificity, however, is solved in my use of ‘axial coding’, or what I will describe below as an ontological-relational model for information retrieval. I was also aware that too much specificity could lead to low recall, or even “overcoding” (171), which would have rendered my results unusable.

4.2.3. Exhaustivity

Exhaustivity represents ‘the breadth of representation’—the number of different concepts or factors included in the coding. For my codebook to be exhaustive, I had to include all of the variables implied by my research questions. Relevance, in a study that employs constructivist GT, is a malleable concept. My research questions cover quite a lot of ground, between the knowledge sharing practices of the academic library and the communities that thrive around it, to the implementations of social media and the functions they support within that context. Early on, I learned that it was essential I understand the role social media played in relation to other knowledge sharing practices. This was reflected in my interview questions, which discussed not only communities of practice and social media specifically, but also modes of organizational communication more generally. What this meant for my analysis was that I had to include codes for other forms of knowledge sharing that emerged besides social media: face-to-

face, email, instant messaging, and cloud computing applications. The GT approaches employed also made sure that I remained alert for related concepts: issues of work/life balance, the problems for socialization that surround multi-branch or virtual offices, anxiety over privacy issues related to social media use, and so on. My codebook, therefore, had to be relatively exhaustive. Exhaustivity is related to the measurement of recall: how much of the available relevant data is retrieved from the total available relevant information. ‘High recall’ means that I can retrieve all the information related to a particular theme or variable (165; Cleverdon, 1972). ‘High exhaustivity’ means that more codes are used, allowing more data to be retrieved and analyzed (Given & Olson, 2003, 165).

The problem with high exhaustivity is that the more themes that are coded, the greater the likelihood of retrieving irrelevant data in searching my codebook; high recall comes at the cost of precision. As mentioned above, I had several reasons to make my coding exhaustive; the challenge was keeping it from becoming *too* exhaustive. To do this, I made sure that I coded references to modes of communication other than social media only when they were clearly identified in the context of organizational knowledge sharing practices (i.e., communication in the academic library/workplace). For the creation of new codes, I followed an iterative process (sections 4.5-6), in which I made an annotation for the first occurrence of a concept or phenomenon (e.g., “need for standards”: “an expression that the tool or technology implemented lacks rules or standards”), and through the review of annotations and iterative sweeps of interview transcripts, would create new codes only if the concept or phenomenon recurred. I also created codes *relationally*, with the expectation that the intersection of categories would play an essential part in the way I retrieved data for my results, and in this way ensure a balance between the exhaustivity and specificity of my coding.

4.2.4. An Ontological-Relational Model for Information Retrieval in Qualitative Coding

Balancing precision and recall is a central problem in the field of information retrieval (IR). Controlled vocabularies and taxonomies are arranged

hierarchically using broader terms (class) and narrower terms (instance), which ideally result in fine-grained, mutually exclusive categories of concepts (Given and Olson, 2003; Stock, 2010). When Given and Olson were constructing their KO model, one other important knowledge organization system may not have been on their radar; today, that system is hotly debated in IR (particularly in the context of the Semantic Web): ontologies. I would propose an extension of Given and Olson's (2003) KO model that explicitly expands their definition of controlled vocabulary to ontologies. An ontology, in the context of IR, at its most basic, is "an explicit specification of a conceptualization" (Gruber, 1995, 907; Gilchrist, 2003, 13). A "conceptualization" is an "abstract, simplified view of the world that we wish to represent" (Gruber, 1995, 907), in other words, a microcosm or model of a particular knowledge domain (or discourse). My codebook is such a model, constructed using a vocabulary and definitions that represent the objects, concepts and variables implied by my research questions, and moreover the relationships between them. Gruber (1995) indicates that, while ontologies are often equated with taxonomic hierarchies, they need not be limited to these forms of relationships (Ibid.). As an example, the taxonomy of a tiger would be as a subtype of 'cat'; the Siberian tiger and the Bengal tiger would both be more granular subtypes of 'tiger', within the same classification of 'cat'. Thus, the structure of a taxonomy is that of a tree, rather than a network model (i.e., a classic illustration of this difference is found in the different text encoding approaches in digital humanities: data can be modelled as an "organized hierarchy of content objects" (OHCO), as in any XML schema, or it can be arranged through a variety of network associations in a relational database (Liu & Smith, 2008)). The ontology of a tiger might include this hierarchy of relationships, but could also contain more flexible associations, such as 'Asia'—the continent where the tiger exists—or 'Detroit'—for cities with baseball teams named after it (Figure 4.1). While the difference may be semantic (pun intended), it resolves to show that while ontologies contain taxonomies, and while taxonomies are merely ontologies arranged hierarchically, ontologies are conceptually defined by their capacity to arrange knowledge using a far more flexible set of relations.

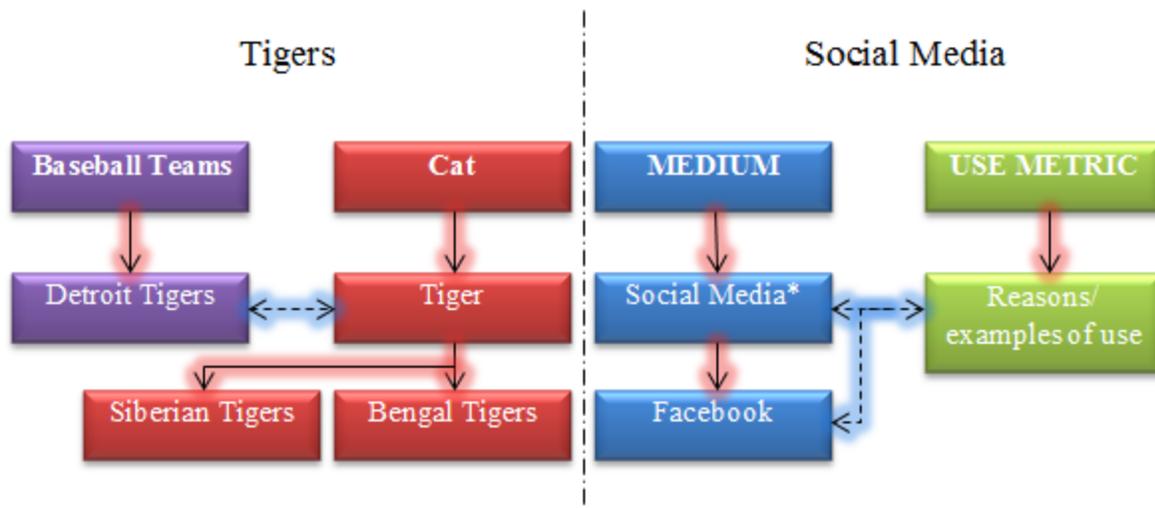


Figure 4.1. *The Ontological-Relational Model of KO (comparing the ontological and taxonomic relationships of tigers and social media). Solid red arrows designate taxonomic relationships between concepts, while dotted blue arrows signify ontological relationships between concepts.*

Vickery (1997) suggests that a database with knowledge about what categories and concepts exist in a particular domain, what properties they have, and how they relate to each other could be regarded as an ontology (283). The primary benefit of using CAQDAS, such as NVivo 10, is that such software typically functions as a relational database. When I construct queries to retrieve results in the form of coded segments from interviews, I can combine multiple codes that together represent a theme or answer to a question. For example, if my question is, “how are participants using Facebook?” I can create a query that retrieves all references that were coded for both “Facebook” and “reasons/examples of use” (Figure 4.1). If my question is, rather, “What do participants perceive as a need when using wikis?” My query will search for all references coded for “wikis” and “user needs”. I could make my question even more precise: “Do participants perceive two-way conversation as a need when using wikis?” My query would then retrieve the highly-specific set of references coded for “wikis” and “user needs” and “dialogue” (this retrieves five references, and provides a resounding ‘no’, with four participants’ explanations of ‘why not’

in varying degrees of detail). Only one of the five results in this example proves irrelevant, since the reference codes “dialogue” in relation to another concept.

What does this mean in terms of precision and recall? My foreknowledge of the ontological framework for IR allowed me to plan the structure of my codebook before I actually had any codes, knowing the kinds of questions I would need to ask when retrieving results later on with database queries (those provided above are just a few examples of actual queries I employed in my analysis). I had the flexibility required of GT approaches, namely allowing codes to emerge from the interviews inductively and spanning a broad variety of themes, and arranging them into more specific categories in subsequent sweeps of the data. Codes like “Reasons/examples of use”, by themselves, result in very high recall and extremely low precision; but, by relying on the ontological relationships between codes and categories to provide intersections between concepts, I am able to increase precision significantly, and to limit the retrieval of irrelevant data. Ontology can be an equalizer for precision and recall, so long as the ontological relationships between conceptual categories and codes are clearly defined and adhered to.

My coding is basically taxonomic, in that it is structured around high-level categories broken down into more specific, related concepts/themes, but it is also designed to function practically as an ontology, particularly at the retrieval stage, in order to obtain relevant results for the construction of an emergent theory on social media use.

4.2.5. Consistency

Consistency relates to the accuracy of categorization, and the steadfast application of coding according to defined parameters. In projects where multiple coders perform the task of analysis, inter-coder reliability (ICR) checks are standard operating procedure (Armstrong et al., 1997; van den Hoonaard, 2008). Since I was undertaking the task alone, however, this was a non-problem. That’s not to say consistency was not a concern; indeed, the more data I coded and the

larger my codebook became, the more challenging it became to remain consistent in my application of codes. One of the key challenges was also remaining flexible; my initial impression of a theme or variable as it emerged in the first coded transcripts might evolve into a broader, narrower or related concept (or set of concepts) as I encountered new instances of it. For example, in an early version of the codebook, “documentation” was a code under the category MEDIUM. But, as I worked through the interviews, it became clear that the participants more often used the concept when describing the practice of recording information for future reference; eventually, after re-reading earlier interviews, I decided to move the code into the category of ACTIVITY, and change it to “documenting”. This made much more sense later in retrieval, when it was clear that “documenting” co-occurred with other media for knowledge sharing, such as email, and—significantly—wikis. In this example, the solution for maintaining consistency was the iterative process of coding (i.e., successive sweeps of the interview transcripts). Always, a balance must be maintained in KO.

Another proof against inconsistency was to maintain an “audit trail” (Kikooma, 2010). The use of NVivo 10 as CAQDAS facilitated the documentation of updates to my coding by automatically attaching timestamps. Annotating and linking, described below in greater detail (section 4.6), also served the purpose of maintaining an audit trail, so that I knew exactly what I had done and when. A visual feature of the NVivo software that allowed me to see coloured ‘coding stripes’ of how much of a given interview I had coded, and with what codes, proved helpful. ‘Node’ properties within the software provided me a place to store definitions of codes, and to easily refer to them with a click of the mouse. I also kept a copy of my codebook tacked to the wall of my office cubicle while I completed the analysis as a far less technological remedy (Figure 4.5).

Finally, the best way to avoid inconsistency is to balance moderate specificity and exhaustivity (Given & Olson, 2003, 167). Given and Olson make it clear that some inconsistency, or “noise”, is unavoidable, and will inevitably introduce irrelevant research results. Balancing specificity and exhaustivity

through the strategies I have described, however, should keep such noise at a minimum and ensure the relevancy of results.

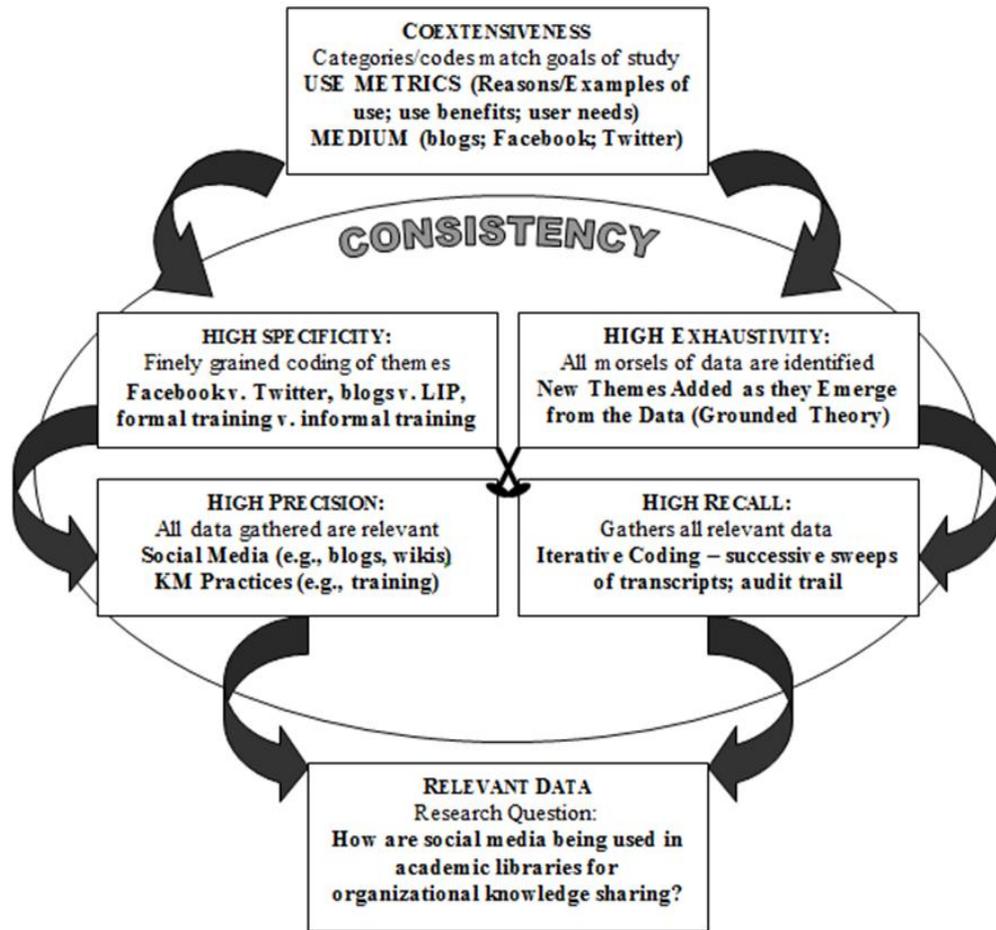


Figure 4.2. *The qualitative data analysis model (Given & Olson, 2003, 172).*

The KO model, as applied to my own research, is reproduced in Figure 4.2 using the first of my three research questions as example.

4.3. Coverage

For a sense of the scope of the data collected, it is worth noting the following:

- 15 hours and 53 minutes of recorded audio;
- 271 pages of interview transcripts.

Comprehensively, the analysis includes:

- 6 conceptual categories;
- 63 codes (including categories and subcategories);
- ~7733 coded segments;
- 366 annotations;
- 34 memos.

Ensuring that the analysis appropriately covered all aspects of these issues in interviews was no mean feat, given the scope of the study's research questions and the broad application of knowledge management (KM) as a lens for understanding organizational communication practices. In large part, the design of my research questions, as it is explained in the previous chapter, was meant to address this challenge and guide my decisions throughout the analysis. Still, it is necessary to identify the boundaries and scope of the coding (i.e., exhaustivity).

4.3.1. What does it cover?

The analysis covered all references found within the interviews relating to each participant's use of social media specifically in the organizational context, but also in their personal interactions and private lives. Coding was also developed to capture the feelings and observations of participants regarding their colleagues' use of social media, the way the organization and the library uses social media, and the participants' sense of societal expectations about social media. Unique examples of use were highlighted for reference and linked via annotations. In addition to the various methods defined as 'social media' in Chapter Two, coding also captured more traditional modes of communication and knowledge practice (e.g., email, instant messaging), in order to compare patterns of use and subjects' attitudes toward different approaches to knowledge sharing. This proved essential, as several key findings are based on this comparison (e.g., the central importance of email to organizational communication expressed by all participants, regardless of site). It was important for the analysis to also cover key concepts for theoretical sensitivity; references relating to communities of practice,

innovation diffusion, virtual office practices, access to information, knowledge-sharing-as-dialogue, and work/life balance were essential, given how they relate to the theoretical discourses my study engages with.

Table 4.1 addresses the question of coverage by providing the ways in which each conceptual category of the codebook answered the study's research questions (i.e., relevance). It also indicates how categories are oriented to answer a particular aspect of the set of relationships proposed by the research questions: the *who*, *what*, *when*, *where*, *why*, *how*, and *with what consequences* an event occurs (Strauss & Corbin, 22).

4.4. Process and Structure

It is useful to explain the difference between process and structure and how they interrelate as phenomenological concepts, in the context of my study's practical approach to analysis. By clarifying this distinction, it will be possible to better understand decisions taken in the coding process, while also making it clear how this method of analysis manages to achieve an emergent theory of social media use.

'Open coding' according to Corbin and Strauss (1998) comprises three activities: *classifying*, *conceptualizing* and *memo-ing* (101-121). These are the essential functions that permit abstraction from the raw data obtained in interviews. The purpose of open coding is to study **process**: "how persons act/interact" (127). This purpose would appear to appropriately match the goals of my study: to explore research questions intended to map "the *process* of how knowledge is shared" in academic libraries via social media—as concluded in the previous chapter. In reality, however, open coding only represents the first half of a method for generating a theory. Once data have been deconstructed into broad themes and concepts as categories and subcategories, they must be reconstituted through "statements of relationship" (22) (i.e., ontology). Otherwise their significance as interacting components within a larger system, structure or reality will not be fully captured. This half of the process is referred to as 'axial coding', and is manifested through the *linking* (or intersection) of categories and

subcategories. The purpose of axial coding is to study **structure** by answering **why** a particular phenomenon (or process) takes place (127-128).

This research was undertaken with the understanding that **structure** and **process** are integrated concepts. In asking the ‘hows’ explicit in my research questions, I am also evoking the ‘who, what, when, where, why and with what consequences’ that set the conditions in which the examined phenomena take place. At its most basic, open coding answers the ‘how’ by capturing the actions, interactions and outcomes of participants, while axial coding answers the ‘why’ by capturing the shared conditions of the participants’ actions, interactions and outcomes. Theoretically, this is depicted as a two-step process: open coding represents the first part of the coding process that breaks down the discourse of participants into categories and subcategories of themes, while axial coding, as its name suggests, finishes the process by systematically identifying and describing the intersections between these themes, and their significance. In practice, however, open and axial coding happen simultaneously in the form of memo-ing, annotating and linking, all functions facilitated by the qualitative data analysis software, NVivo. Moreover, from a GT perspective, these succeeding layers of coding take place iteratively, as analysis takes shape through constant comparison between data. It is more useful, then, to think of open coding as the base-level analysis of the primary data obtained through interviews and field notes, and axial coding as a higher-level analysis that occurs when I evaluate the data generated from these primary sources in the form of codes, categories, themes and relationships. In this way, both process and structure are comprehensively captured in my analysis.

“Theory”, as defined by Corbin and Strauss, is “a set of well-developed categories that are systematically interrelated through statements of relationship to form a theoretical framework that explains some relevant phenomenon” (22). This definition manifests the relationship between process and structure. Corbin and Strauss refer to this relationship as a “coding paradigm” (127-128; Kelle, 2010,

201-202). It is only through the integration of both concepts that theory can emerge.

4.5. Developing a Codebook

Before the application of any analysis software to facilitate the work, my coding began at a document-level. In the frame of the two pilot studies that collected data from nine interviews with participants from Grant MacEwan Library and Rutherford Library, the interview recordings and completed transcripts were analyzed (i.e., listened to or read carefully and repeatedly) to draw out major themes and to supply theoretical explanations on social media use. These preliminary findings were presented in the form of term papers to fulfill course credit and as ‘work-in-progress’ papers at two academic conferences (Forcier, 2012a; 2012b). These early results were significant, since they suggested key concepts evident in the data that I needed to capture in the more detailed ‘line-by-line’ coding that subsequently took place. I was careful, however, not to construct my codebook for this subsequent stage of analysis on the basis of early results. I remained aware that a more granular analysis might reveal surprising findings that could contradict my original conclusions. Rather, I maintained the preliminary results as a layer separate from the coding that took place using NVivo, and with which I could compare as this more focused analysis took shape. In other words, both the document-level coding and the line-by-line coding generated results inductively, but by maintaining them as two separate levels of analysis and comparing their results for consistency, I was able to perform what Charmaz calls “abductive inference” by having multiple theoretical explanations for the data and selecting the most plausible one (2006, 188). ‘Abduction’ is distinct from ‘deduction’ and ‘induction’, in that it represents an inference based on observed facts; the notion is suggested in the philosophical writings of Peirce (1955), who described this type of inference as follows:

The surprising fact, *C*, is observed;
But if *A* were true, *C* would be a matter of course,

Hence, there is reason to suspect that *A* is true.

(151)

To rely too heavily on abductive inference may lead to the logical fallacy of *post hoc ergo propter hoc*; however, in combination with a primarily inductive approach, it is particularly useful in Grounded Theory, since the goal is not to produce an objective, incontrovertible truth, but rather to produce the likeliest explanation of a social process based on observable facts (i.e., an emergent substantive theory). Peirce admits that, when it comes to human research and the study of “characters” (i.e., qualitative data), inductive analysis must rely on a certain degree of guess-work; this, he calls “abductory induction” (152). His term is synonymous with Charmaz’s “abductive inference” (2006), which depends on iterative GT approaches in the analysis of grounded data and constant comparison of results to then extrapolate a theory (“hence, there is reason to suspect that...”) about the social process under study. An example from my own analysis, using Peirce’s formulation above, would be where *A* = “academic libraries have not adopted social networks for internal organizational communication” and *C* = “none of the participants used social networks for internal organizational communication.” The comparison between early document-level analysis and the later, line-by-line coding made sure that I took into account the many possible explanations, and only entertained that likeliest in the development of my substantive theory of social media use (Chapter Six, “Discussion”). And, as I mentioned in Chapter Three (“Research Design”, 3.7), abduction represents one of the strategies I employed to ensure all intellectual blind spots were covered and to avoid any potential bias.

Following the third phase of interviews, once transcription of interviews was completed, line-by-line coding began using the qualitative data analysis software known as NVivo 10. The functions, failures, and solutions experienced through my interaction with the software are described in greater detail later in this chapter. Interviews were analyzed chronologically in ascending order, starting with the first set of interviews from Grant MacEwan University and

working forward in time through each set. The first interview was coded ‘in-vivo’—meaning that themes and concepts were created directly from the words of the participant. Following the second interview, these codes were loosely grouped into seven conceptual categories, and some were reworded to better reflect the question or reference they were intended to capture. New codes were added with each interview, with some codes merging or splitting into distinct concepts, and others developing nuances that moved them from one conceptual category to another. Whenever I effected such changes, subsequent sweeps of previously coded content took place to ensure consistency. As part of the reflexive autoethnography and “audit trail” (Kikooma, 2010), memo-ing and annotations were also employed to track these changes throughout the process. The codebook that emerged from the first set of interviews with Grant MacEwan University Library continued to be used with each subsequent set from the University of Alberta, although I maintained a critical awareness of potential differences from the shift in context, which were faithfully recorded in annotations and sometimes led to the creation of new codes.

Although codes as categories and subcategories remained relatively fluid throughout the coding process, the conceptual categories were firmly established by interview 008, and themes began recurring with a regularity that suggested theoretical saturation well before the sample had been completely coded. These conceptual categories are listed in Table 4.1, with a brief description, examples, and an explanation of how they relate to the study’s research questions.

Table 4.1. *Conceptual categories used in coding, and how they address the study's research questions.*

Category name	Description	Relation to RQs
ACTIVITY	Any kind of organizational activity discussed in the context of organizational communication and knowledge management (KM).	“Activity” and “Medium” are overlapping categories that list and describe the participants’ most common methods for knowledge sharing within the organizational group. “Activity” recognizes such <i>practices</i> (i.e., activities) that were most often described by the participant as something that <i>you do</i> (documenting, meeting, tagging, collaborating) rather than a <i>medium that is</i> (email, blog, telephone—i.e., a tool or thing). It is an essential category for capturing social media in their various manifestations, and how they relate to the library and the librarian’s KM practices. This category is designed to answer the “how” and the “what” of KM and social media use.
	<i>Example:</i>	
	<i>Informal training and meetings</i>	<i>I spent time with the other librarians and they definitely passed on a lot of their knowledge and, you know, we worked together. But at first...you’re attending meetings constantly here, it seems, and the first little while, you know, it was very... much of a learning experience for me attending these meetings. (Alex)</i>

ATTITUDE	References that reflect a participant's attitude toward a technology or mode of communication. May also reflect an answer to a specific question posed in the interview guide designed to elicit a personal reaction to social media use.	This category is essential in particular to the second research question, intended to address the “prevailing attitudes” of academic librarians toward social media. Several questions in the interview guide are explicitly designed to elicit the type of response from which such a question can be answered, but interviews are peppered with answers that reveal participants’ personal feelings and perspectives on such tools. This category explains the “why”, as well as other questions that support the context of the sampled participants (“who”, “when”, “where”).
	Example:	
	<i>Discretion</i>	<i>I think a lot of people have reservations about writing down their opinions in a professional environment. [...] There would have to be significant draw to pull them into discussing issues in the blog, because they have that [face-to-face] option—it’s less risky! It’s not recorded anywhere! (Jackie)</i>
KEY CONCEPT	Addresses a key concept of the research study, relating to theoretical frameworks or paradigms of interest to the analysis. (e.g., dialogue, innovation diffusion, communities of practice)	There are a number of concepts raised in the KM and Web 2.0 literature that informed the interview guide, and, moreover, the study’s research questions. Capturing all references to these concepts is essential to this research, since it permits me to address questions that deal specifically with these existing models or theories. For example, the third research question is explicitly interested in the concept of “communities of practice”, and how it is represented in academic libraries. A code within this category makes it possible to capture all comments by participants that deal explicitly with “communities of practice”.

	Example:	
	<i>Virtual office</i>	<i>...my communication the bulk of it would happen online just cause I'm at a distant campus so all of the other roles I have where I talk to people here most of it happens online (Carol)</i>
MEDIUM	Any tool or technology used for organizational communication or knowledge management (KM)	“Activity” and “Medium” are overlapping categories that list and describe the participants’ most common methods for knowledge sharing within the organizational group. “Medium” recognizes such methods that were most often described by the participant as something that <i>is</i> or that <i>you use</i> (email, blog, telephone—i.e., a tool or thing) rather than an activity (i.e., <i>practice</i>) that <i>you do</i> (documenting, meeting, tagging, collaborating). It is an essential category for capturing social media in their various manifestations, and how they relate to the library and the librarian’s KM practices. This category is designed to answer the “how” and the “what” of KM and social media use.
	Example:	
	<i>Twitter</i>	<i>...we just started our Twitter account. Like... not too long ago. We only have, like, 25 followers. So, I think, the most talk we've had was... twice. Someone said, "happy Friday!" back, and someone thanked us for a retweet. That was really all. (Karen)</i>
MISC	Includes answers that capture quantitative data about the participant, such as age, gender, title, and self-described responsibilities. Also: anything that doesn't fit any other categories, such as memorable statements, funny or outrageous exchanges, and elaboration on issues that might not be directly related to the study but are still	The individual data component was initially a separate category, but was later merged into the MISC category. This data was used to create the classifications of interviews and participants, permitting analysis based on site, age, gender, title, library experience, and responsibilities. In this way, it helps answer the “how” evident in my research questions, as well as the “who” of my participants. This category, however, also captured data relevant to the study in a quite different way; memorable

	relevant in an LIS context.	statements, for instance, were the sort of resource I was able to tap for the narrative construction of results and to identify the most noteworthy comments from participants for later reflection.
	Example:	
	<i>Librarians</i>	<i>I suppose you use your librarian skills online, see if you can find it out. If it's not on LIP. (Beth)</i>
USE METRIC	Factors for measuring an individual's or a group's use and engagement with a particular tool, technology or method for knowledge sharing (specifically, social media).	Intended to be used in parallel with either "Activity" or "Medium", "Use Metric" is valuable for capturing the participant's stated use of a given method for knowledge sharing. In this way, it captures the "how" of social media use and KM practices, with the most practical subcategorization possible: e.g., comments that describe frequency of use, examples of use, and ease of use of a given method. 'axial coding' that combine "Use Metric" codes with codes from other categories (particularly, "Medium" and "Activity") are central to obtaining results that will answer the study's research questions.
	Example:	
	<i>Reasons/examples of use</i>	<i>I have personal Twitter which I keep separate from work Twitter, Facebook is sort of both because I have lots of professional colleagues on Facebook as well friends from totally different contexts and LibraryThing I use but not for professional, not in a professional context... (Gloria)</i>

For a list of all subcategories, codes and descriptions, and to compare changes that occurred over the course of coding, see Appendix Three (“NVivo Codebooks”).

4.6. Memo-ing, Annotating and Linking

As indicated above, in practice ‘axial coding’ took place simultaneously with ‘open coding’. The best proof for this level of coding can be found in the form of three distinct functions of qualitative analysis: memo-ing, annotating and linking. All three of these functions served the purpose of making connections and formulating theory based on the evidence accumulated within coded data. This purpose also permits the construction of an “electronic audit trail” (Kikooma, 2010, 47).

4.6.1. Links

Links between data manifested in a variety of ways. One way in which this was done was through ‘classifications’, a function of the NVivo software. Interview transcripts were linked to a “classification” table that collected metadata about the participant and site (Figure 4.3). In this way, study results had the capability of being broken down based on demographic data: age range of participants, gender, sampled sites (branch/institution), years of experience (career), years of experience (current position), title, self-description of role and responsibilities, etc. This function proved important to my analysis, since this is what provides the wide range of scale for my study, and ensures accurate reporting in my results. The concept of linking-through-classification (i.e., metadata) is what allows me to move easily from the very specific, individual level of the participant to the much broader, sample-wide level from which I can suggest an emergent theory on academic libraries’ social media use. No less important is the freedom to draw comparisons between branches and sites in the stages that fall within that spectrum, providing different examples and understandings of organizational community and its varied manifestations through social media.

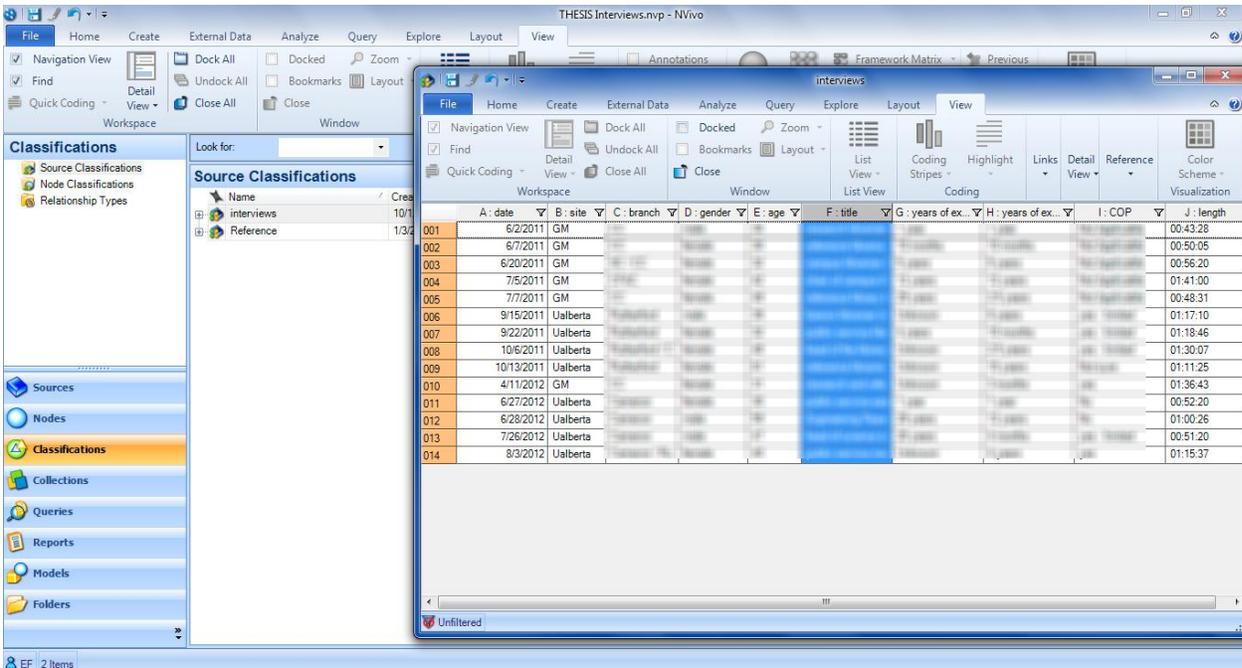


Figure 4.3. A classification table in NVivo 10. Content blurred to protect the anonymity of participants.

Links were made in other important ways as well. Both annotations and memos, functions distinct enough to be described separately below, can be considered a manner of linking my own analytical reflections and recognition of patterns in recurring themes to specific interviews and interview segments. NVivo also permitted me to develop and save Boolean queries that linked to the results from interviews across the set at the intersection of multiple codes.

While NVivo also supports a function for ‘linking’ materials in addition to those described here, it did not prove useful in my analysis.

4.6.2. Annotations

Annotations are brief reflections or observations on specific segments of interviews, usually no more than one or two sentences that identify recurring themes or issues. The primary purpose of these notes was as ‘signposts’ for later analysis. These were often written at the same time as the ‘open coding’ of the interview transcript took place. Annotations were regularly reviewed to improve

and update the codebook; often new codes were suggested in annotations, and if the theme recurred often enough, I would then add it to the codebook. Sometimes annotations noted broad themes that occurred at the intersection of specific codes. These were used to create and test search queries. Annotations often served to spark an idea, which would later be explored in greater detail and broader scope in a memo.

In addition, annotations played a central function for the identification of higher-level themes. Annotations were exported and hand-coded for patterns of recurring themes (see section 4.8.3). These results were valuable for comparing key preoccupations between sites, as well as with the preliminary results achieved in the early document-level analysis. The patterns that most often recurred in annotations ultimately reflected the most compelling findings of the interviews.

4.6.3. Memos

Memos are longer reflections on themes revealed in the data as central to the knowledge practices and social media use of the participants. These often referred to specific interviews, annotations or other memos created in NVivo. Memos, as a function of the software, also represented the medium for the journal entries I maintained throughout the analysis. In several cases, memos were written with the expectation that they would serve as rough drafts for sections on the discussion of findings found in this thesis. In others, memos were meant as a living record of the considerations and choices made when the codebook went through its transformations.

Memos rarely dealt with specific segments of interview transcripts, except when referring to annotations as examples, but were meant to provide commentary at a broader level of the analysis.

4.7. Critical Engagement

The coding process represents not only the qualitative research techniques described above and in the previous chapter, but also a reflexive autoethnography. Throughout the coding, I kept journal notes on my use of the qualitative data

analysis software, NVivo, and on the choices made throughout the analysis. This allowed me to maintain a critical distance from the implied uses imposed by the software's design, and to engage with some of the more gnarly problems involved in coding such a complex set of data. By sustaining a constant dialogue with myself on the issues faced in coding, I was able to address those issues in a consistent fashion. In this way, I avoided the pitfalls posed both by the assumptions reflected in the software's design, and my own assumptions about the concepts and relationships that arose in interviews. At the same time, the notes generated an additional layer of data that can provide insight into the challenges researchers face in conducting similar qualitative studies. The notes themselves were recorded as memos in NVivo.

Kikooma (2010) provides a detailed explanation of how such reflexivity works in the context of qualitative analysis, and how it is practically applied in NVivo. From the social constructionist paradigm, reflexivity requires “an awareness of the researcher's contribution to the construction of meaning throughout the research process, and acknowledgement of the impossibility of remaining ‘outside of’ one's subject matter while conducting research.” (48; Willig, 2008, 10). As I read through and coded my interviews, I also developed an understanding of how my interactions with study participants and my own knowledge as a member of the different communities involved influenced and informed the research; the journal provided a medium for such reflections. Kikooma (2010) identifies two forms in which reflexivity is manifested: 1) “personal reflexivity”, reflecting upon the ways my own initial assumptions and social identities shaped the research; 2) “epistemological reflexivity”, reflecting on the way my conception of knowledge and the world, and the decisions I had made throughout the design, data collection and analysis impacted my research (48).

‘Autoethnography’ is defined as a “broad rubric” for methodological strategies that “connect the autobiographical and personal to the cultural, social, and political” (Ellis, 2008). Relevant to this study, it can be used reflexively to

“bend back on self and look more deeply at self-other interactions” (Ibid.). The concept of ‘other’ in this particular context is slippery: would this represent the participants? The data itself? Or could the ‘other’ signify the data analysis software I was employing to render my results? In this sense, my application may be less strictly ‘ethnographic’ in nature, but it does provide a study of self, and emphasizes the importance for any researcher to always remain critically engaged with the data and research questions, and to maintain the integrity of his or her research goals. Considered another way, journal notes that can be characterized as ‘personal reflections’ reveal something about self, while ‘epistemological reflections’ reveal something about the implementation of my research. The ‘self-other’ interactions of autoethnography are thus made evident in my journal notes, and provide additional meaning with which to understand the results of the study.

4.8. Autoethnographic Observations

The idea of maintaining a journal occurred early on in the detailed, line-by-line phase of coding, when I first began to use NVivo 10. One of the very first memos created using the software, in fact, defines my approach in the following manner:

Auto-ethnography: Explanation of the process for capturing my approach to coding the data using grounded theory method. This process takes the form of an auto-ethnography: I make observations on the progress of coding, the deliberate selection and creation of codes (or nodes), and my conscious engagement with and the challenges I face in using NVivo as a qualitative analysis (i.e., coding) tool. These can then be supplied in a chapter of my thesis that explores the codebook development and process of analysis used in this study.

In other words, this part of the research (in the form of these auto-ethnographic memos) becomes a

‘study of a study’, where I critically examine the actual method and practices I’m employing in analyzing my data. Totally meta.

It is clear from this characterization that my focus was on issues of consistency and ensuring the relevance of results from my coding using NVivo 10, rather than a preoccupation with how the data might have been shaped by interviewer-interviewee interactions during the collection phases. My personal reflections within these entries, however, do occasionally engage with such issues as well. The following section is broken down to discuss 1) personal reflections, 2) epistemological reflections, and 3) guidelines for using CAQDAS, derived from the “auto-ethnographic memos” employed in my analysis.

4.8.1. Personal reflections

One of the best examples for my ongoing interrogation of assumptions originates with the coding of a seemingly innocuous concept: documentation. In the first two interviews, it seemed clear that ‘documentation’ was a *thing*: a medium for communication that possessed the specific affordance of preserving knowledge explicitly for later retrieval. As my journal reveals, however, the deeper I dug into the interviews, the more problematic this conceptualization seemed. Following the coding of the third interview and the grouping of codes into six conceptual categories, I shared this first version codebook with my supervisor. One of the notes he provided cautioned me about the conceptual overlap between ‘documentation’ as an object or medium, and ‘documenting’ as an activity, or practice. Here is an excerpt of a journal memo that reveals my initial response to this feedback:

...I’m not actually concerned about the overlap here. When I review coded references, I can note the intersection of codes, e.g., “blogs” AND “documentation”, and determine from context where participants actually refer to blogs AS

documentation. ...I want to avoid making the assumption that blogs/email are documentation, necessarily or even conditionally, and rather allow the data to show me if/when that overlap occurs.

My coding of written “documentation” as a MEDIUM, does imply a degree of formality; it is written work recorded for future reference and shared with peers within the organization in some official capacity (either as policies, procedures, meeting minutes, proposals, etc, and can be either complete or in-progress). When the overlap does NOT occur, this implies that the medium (blog, email, etc) is not assigned that same characteristic of being official/needed for future reference, and represents a more informal communication. I’ve slightly altered the description of the “documentation” code to represent this nuance. It’s also worth noting that, in some references, the participant might be talking about such documentation generally, while-- even if it goes unmentioned-- they may be accessing these documents via email forwards, blog posts or updates on the intranet.

This rationalization is logical, and appropriately reflects the ontological-relational model I had adopted for coding; but the feedback had alerted me to an assumption about the nature of ‘documenting’ that I had not previously considered. And whenever I encountered references to documentation/documenting in interviews, I now found myself wrestling with the concept. This reached its culmination after completing the coding of the fourth

interview, when I made the decision to reframe the code as a KM practice instead of a medium:

- MEDIUM/documentation -->
ACTIVITY/documenting

As I coded [this interview] in particular (and following my critical assessment of the code in “AE - return from break” memo), I began to realize that, while I’d originally intended the code to capture all written documentation (with an eye on print), it was in fact capturing all references to the *activity* of *documenting* (or recording for future use) events, information, content-- knowledge. With this move I have not broken out a new code to capture *print documentation*, though that might be worth doing at a later point. By definition, this code should continue coding print documentation, but more importantly it will capture the intersection between the *activity* and a specific digital/social medium.

This reassessment of initial assumptions proved valuable in the end, since it allowed me to query my coding in NVivo for instances where social media (and other modes of communication) were being used to create and share explicit knowledge, as opposed to tacit knowledge in the form of dialogue or storytelling.

The coding can sometimes offer a unique insight into the interview process, and mistakes or judgments made at the time that affected the participants’ responses. When reading transcripts it is not uncommon to encounter instances where you wish you had asked what seems like the most obvious follow-up question, or had lingered on a particular topic. One potential solution is to perform follow-up interviews to clarify specific points with participants, but this is not always effective or possible. As a researcher and interviewer, you need to trust that you made the best decisions in directing the interaction that you could

with the information you had at the time. It is, however, essential that you recognize these moments where the quality of the information shared by the participant may have been impacted, and to take due consideration of that fact in the analysis of results. I grappled with this realization in my own review of the interview transcripts:

My interview with [Carol] is scattered. Normally, even after a significant amount of time has passed, I can anticipate the follow-up questions or prompts that I should/will ask in the structure of the interview. While I follow the script closely in this interview, I must have been nervous and playing it safe because there's a number of missed opportunities for follow-ups.

It's worth noting as a reflexive exercise when it's clear in my responses as interviewer that I was unfocused or spinning my wheels. I need to stay focused on the issues addressed in each question, and how they relate to my research questions. Time will tell if my skills as an interviewer improve over the course of this set (I believe they do, but until I complete the analysis I can't know for sure).

As a personal reflection, this made me acknowledge my own shortcomings as an interviewer, and strategies I might employ to improve my skills when conducting interviews (i.e., staying focused on the issues addressed in each question). This particular insight leads me to other, epistemological reflections, which I will continue below.

The journal memos also tracked significant changes between sites. These were fewer than anticipated, but the transition specifically from Grant MacEwan University to University of Alberta led to the introduction of new concepts. For

instance, following the coding of the sixth interview (i.e., the first interview from the Rutherford sample) I wrote a memo that identified a list of concepts to consider for addition, with references to annotations I had written in the interview transcript. This memo noted that most of these new concepts were localized to ACTIVITY(i.e., KM practices) by adding “nuance” to concepts I had previously maintained in the coding (e.g., “hovering: learning by observation, rel. to ‘lurking’, but has an in-person element (presence is implied). For now, this is being coded under ‘informal training’.”). As a personal reflection, it also revealed my surprise that such concepts were already being captured in a number of (less specific) ways through the existing codebook. The memo also identified my own assumption that there should be a significant change between sites, when in fact those changes were more subtle than anticipated.

Theoretical sensitivity is a concept that is frequently emphasized in the GT literature (Glaser & Strauss, 1967, 46-47; Bryant & Charmaz, 2006, 16-17). Essentially it highlights the necessity for the researcher to be familiar with the theoretical discourses that study processes or phenomena similar to one’s own object of study. The researcher is thus equipped to meaningfully interpret results in the context of such discourses. My literature review, as represented in Chapter Two, provides a summary of the discourses my own research engages with, and in that way it can be read as a gauge of my own theoretical sensitivity. However, this is complicated in GT by the importance of obtaining results inductively, rather than arriving at conclusions deductively, according to a pre-supposed set of theoretical principles that serve as assumptions (or hypotheses). The researcher’s engagement with existing literature should help explain findings, or to expand the discussion of results, rather than to dictate the analysis that produces results. A particular example of this occurs in one memo, where I debate the significance of an overarching theme emerging from the data, and its potential significance in existing discourses:

This is something that struck me while coding [the sixth interview], but that I think has been

percolating in the back of my mind for awhile. I just hadn't quite found the words for it.

The reason social media has not been adopted for internal communication is not that there isn't a willingness to try, or that it wouldn't fit the needs of the organization, but because the desire for change hasn't reached a CRITICAL MASS. In order for change to happen, there has to be a critical mass of opinion, there has to be enough people WANTING change, actively pushing for change, and considering new options.

I feel like this could be a major finding of my research: that critical mass simply hasn't been reached (in academic libraries). Was it reached with email? When? ...Email might serve as a valuable point of comparison. Also consider the case of UNLV (*i.e.*, *Costello & Del Bosque, 2010*)-- have they reached critical mass? What are the pre-conditions for that event to occur?

I need literature to discuss this idea of critical mass. As a point of departure, Rogers' "Diffusion of Innovation" (*i.e.*, *Rogers, 1995*), and any literature on change management should speak to this point, or at least provide an appropriate analogue.

This concept of "critical mass" emerged directly from interviews in participants' evaluation of social media adoption; Gloria uses the term explicitly to refer to her hopes for the library's wiki implementation. In the memo above, I am consciously considering the concept in the context of two existing discourses (*i.e.*, academic library management and innovation diffusion), and asking myself

how I might frame discussion of this finding about “critical mass” for it to be meaningful to those two areas. This awareness of the implications of my research to existing bodies of knowledge is an example of theoretical sensitivity in GT.

4.8.2. Epistemological reflections

My understanding of qualitative analysis as a basic research activity is fundamental to any discussion about the coding process described in this chapter. I have effectively summarized it throughout this thesis in the context of my analytical method (i.e., Grounded Theory) and my research paradigm (i.e., social constructionism), but I characterize it more creatively in the autoethnographic journal through the use of metaphor:

An essential part of coding is serendipity: you juggle and puzzle through conceptual categories, trying to make sense of the pattern, and suddenly two or more puzzle pieces fall into place. Lightning strikes.

The coding process as jigsaw puzzle is an appropriate metaphor because it captures the essential qualities of pattern-finding as both serendipitous and revelatory. The researcher knows they have been successful when the pieces start to fit together, and the pattern starts to emerge. The particular memo this excerpt is taken from expresses frustration after NVivo 10 crashed early in the process of coding. Fifteen minutes of work, including several annotations capturing insights about the data and about the codes that were emerging, were lost. In the journal, I extend the metaphor to emphasize my frustration:

Losing coding work—especially early coding work, in the nature of GTM, when you’re still getting a handle on what the data is telling you—is like spilling the handful of puzzle pieces you’ve been poring over.

This understanding of the activity of analysis plays an important part in my evaluation of NVivo 10 as CAQDAS (section 4.8.3).

An important epistemological reflection occurs in my appraisal of my interview with Carol, mentioned above. In this journal memo, I recognize my role as interviewer in the transcript, and on this particular occasion, I am ‘spinning my wheels’. I attribute this to my limited interviewing skills as a novice researcher. The memo moves past this observed inadequacy by providing a solution at the level of analysis:

Something I’ve been doing with this process is heavily annotating segments as I code them—sometimes to explain why I coded a segment a certain way, or sometimes (less frequently) to address methodological issues. Ideally, this would be part of the memo-ing aspect of the coding process, but since NVivo doesn’t support the linking of memos in that way, the annotation function is the next best thing. And so it has become an important supplement to the coding, just as important as the memos, simply on a smaller, more prolific scale.

I discuss the problem of linking memos in NVivo later on, but this use of annotation to contextualize interview results is very important. It is understood that researchers should evaluate their data objectively, and take into consideration anything that might compromise the quality of the interview (Kvale, 1995, 144-151). *How* one goes about doing so, however, is rarely discussed. Both NVivo 10 and MaxQDA 10, recent versions of CAQDAS, supply functions for annotation; in NVivo, annotations show up as highlighted text, even when segments are retrieved through queries using code values. This means that, when I am reviewing the results of a query, I can immediately tell which results are associated with an existing annotation. By clicking on the highlighted text, I can

then view the annotation, and determine if there are any issues of quality or relevance in the coded segment that I need to be aware of for my evaluation of results.

Related to this observation, a question arose in the journal as I neared the end of the line-by-line coding. It was clear that the annotations contained unique information not captured by my coding. Since the annotations served as commentary on key stories told by participants, and thus identified instances where overarching themes manifested (or were challenged), it occurred to me that I could study this data at a second level of coding in NVivo. The memo function in NVivo creates a memo as a document that can be coded, so that such content can also be indexed and evaluated. Unfortunately, unlike memos, annotations were not codable in NVivo. However, I could export interview transcripts with annotations as footnotes in a Word document, and then import them into NVivo again, thus making it possible to code them in the same way that I had coded my interviews. A second question presented itself, if I chose this option: should I code annotations using the same codebook used for interview transcripts, or should I create a new coding scheme to capture overarching themes, knowing that the annotations linked to interview segments that were already coded with the original codebook? Ultimately, I decided to simply export the annotations and code them for overarching themes on the printed page. A big reason for this, which I elaborate in the journal, is that “the annotations tend to deal with issues that occur at intersections of codes (or concepts, or variables)... often I’m working out the actual mechanism of my analysis within these annotations, which eventually may lead to the creation of a code or set of codes, and so in this way they are ‘proto-codes’.” I also noted that the most important function of this level of analysis was to identify how often these overarching themes occurred in participants’ accounts; the most common themes would represent issues to address in the discussion of results. The consequence of this, as I explained in the journal memo, was that annotations became not only significant—in the manner outlined in the previous paragraph—but central to my final analysis.

Does this impact the way I make sense of these data? Perhaps. But, in theory, these themes should already be captured in the coding. This is just a way of accessing those broad themes that saves me time experimenting with and sifting through various queries. More importantly, it also permits me to “reverse-engineer” queries. I can look at segments of text with annotations that capture a given theme and determine what code intersections are significant based on the way this particular segment of text is coded.

This approach, worked out through the reflexive process, shaped my interpretation and guided the writing of the thesis in a significant way. While the next chapter is arranged according to the implementations of social media in the sampled sites, each section is structured narratively around these overarching themes, tying together participants’ examples and stories in such a way that they invite discussion of these issues.

Another important observation from the journal explains the permeability of conceptual boundaries during the process of coding. It goes without saying that the coding process is fluid; a number of cases demonstrating this fact have already been discussed in this chapter. But the ontological-relational model of knowledge organization applied in my coding process differs significantly from the mutual exclusivity of categorizations in a taxonomic model. I address this issue in a journal memo, when describing the process of early coding and classification into the first version codebook:

...in the initial stages of coding, “activity” and “medium” codes were lumped together to refer to the varieties of methods (or modes) of communication discussed (particularly, but not exclusively, those that take place online). It’s only

when I took on the task of creating parent categories that I separated them, based on how they most commonly were addressed in references. Despite broadly referring to separate, if related, concepts (*i.e., medium/object and practice*), there's a significant overlap between the two categories, which I am constantly aware of; I could have easily created a code for "blogging" as an activity, rather than "blogs" as a medium, and still have been confident that I was capturing the same data. It's only in looking at references I'd already coded (and with the understanding that I am coding everything related to a particular mode/method) that I created the current categorization-- based on how the participants themselves characterize the concept. As I proceed with the coding, I think it's important for my advising committee to understand that the boundaries of these parent-level categories can be permeable, and that some concepts will shift based on the trend I perceive in the coded data.

Indeed, this is what happened with the code "documentation" and "documenting", later on in the process. The discussion taking place in this memo raises a question about specificity: why did I not create separate codes to capture references to the object/medium and the activity separately (*i.e., "blogs" AND "blogging"*)? The answer is pragmatic; creating separate codes would have increased the size of my codebook significantly, and thus the amount of time devoted to coding and re-coding, while only marginally improving specificity. In the excerpt above I imply that much of the data about the object/medium and about the practice of using an object/medium, are identical (*i.e., in the majority of instances where the participant discusses blogs, they also discuss "blogging" as an activity, and vice-versa*). While the distinction of activity and medium, or practice

and object, is theoretically relevant to my research, it is not so useful for the purpose of retrieval. It only becomes useful when an orientation is clearly emphasized more than the other in interviews, such as in the example of “documenting” (as discussed above). Similarly, codes used under ATTITUDE and KEY CONCEPT categories were distinguished on a primarily theoretical level: ATTITUDE related to the individual perceptions of participants toward social media and social media use, but a concept like “liking” (i.e., “Reference to a purely subjective, not always rational or justified affinity (or dislike) for a particular tool, medium or technology”) is closely related to the KEY CONCEPT codes “fun” and “innovation diffusion”. KEY CONCEPT codes lack the requirement for coded references to be associated with the personal experiences or emotions of the participants, emphasizing rather discussion around a theoretical discourse, but practically speaking, it was rare for me not to find librarians “attitudes” embedded within such discussion. As an example, KEY CONCEPT/ “work/life” holds all references where “the distinction (or lack thereof) between work/public life and home/private life” is discussed by the participant, “in relation to their use of a particular tool, medium or technology (e.g., Facebook)”; within that definition, the participant’s *attitude* or opinion on the separation of work activities and home activities, public life and private life, is also captured. It would have been possible to code this more specific shade of “work/life” separately under ATTITUDE, but that degree of granularity was not necessary or useful, for the same reason it was not useful to separate “blogging” from “blogs”. Therefore, the distinction is again one of theoretical orientation. This inherent permeability of certain categories privileges the ontological relationships over the taxonomic relationships of coded data. The intellectual task of making that distinction, then, is reserved for the interpretive work that takes place in the final stage of analysis when presenting results.

The only category exempt from this rule is USE METRIC, which coded references to explicit use. However, this is only because the category itself is defined by its interactions with other conceptual categories; USE METRIC has no significance except through combination with the objects/media or practices

coded under ACTIVITY and MEDIUM, in order to determine use of each object/medium or practice.

4.8.3. Using CAQDAS

My journal identified basic flaws in the design of NVivo 10 as I encountered them in the coding process. It also recorded my critical evaluation of how the software facilitated the process beyond the advantage of computer-assisted information retrieval (IR). Such information is valuable for researchers and developers alike: for researchers, in order to make the best use of the software and to overcome the challenges that it poses, and for developers, in order to understand the ways in which their software succeeds and where it needs to be improved for scholarly work.

There were four basic flaws with the software, which I identified in my journal early in the coding process: 1) saving; 2) restrictive use of symbols; 3) code visibility; 4) linking memos to interview data. I discussed “saving” as a design flaw after the program crashed and I lost fifteen minutes’ worth of work. What was particularly frustrating was that the in-program pop-up reminding me to save occurred immediately prior to the crash; it is impossible to confirm that there is actually a causal relationship between the two events, but it seems likely:

NVivo helpfully reminds you to save every 15 minutes. These reminders in themselves, however, can be disruptive, as they might pop up as you’re typing a memo or annotation, or as you’re contemplating a passage from a source. And, as I suspect was the case yesterday, they might cause the program to crash if it occurs in the midst of another process (i.e., creating a memo). As a result, I basically have to train myself to save manually every few minutes, just to be sure that I won’t lose anything.

There is no easy solution here, besides developing good habits around saving your work. As a database management system, it seems like NVivo could do a better job of preserving content that does not change the database structure itself (i.e., field values), which might include coding of documents at existing codes or creating annotations. This, however, also poses a problem for designers, since the user must have the ability to alter the structure of their data by creating new codes and classifications (i.e., the fields themselves), changes which are stored in volatile memory and requires the user to save to the hard drive. In other words, NVivo facilitates the user's creation of a relational database, without requiring that they be knowledgeable about database design. NVivo achieves this by disguising the fact that it arranges users' data in an underlying relational database structure, and puts the activities of creating codes, memos and annotations, as well as the editing and coding of uploaded documents, all at the same level. As a result, the difference between a field and a field value at this underlying layer is not only opaque, but simply irrelevant to the user, who—the software design suggests—should be more concerned with his own organization of the data. But it does result in issues, like the one I encountered; were NVivo designed differently, it might not have even been necessary for me to save.

A second minor yet irritating problem was the limitation on the use of symbols. Often in creating a memo I wished to identify it as a question in reference to the discussion it contained (e.g., “What is collaboration?”).

I ran into this problem creating titles of memos, nodes and sources; what's odd to me is why the NVivo developers couldn't write in exceptions that replace a given symbol with the unicode entity when it is used in these occasions (which wouldn't have any impact for the user). As most of my memos are motivated by a question, intuitively I want to create a title that reflects that question... except I can't use question marks. Colons are also

out. So I need to be conscious of this when organizing my memos.

The use of certain characters can disrupt a programmed operation, therefore it is important—particularly for CAQDAS, where the users might not be familiar with such conventions—to regulate their use in naming fields and entering field values. Nevertheless, the limitation proved disruptive to my process, and arbitrary, as my reflection suggests.

The visibility of codes within the interface also proved to be a flaw of the design. It stands to reason that the most essential components of qualitative coding are the codes themselves. As a researcher doing qualitative coding, I need to always be conscious of the codes I am using to organize my data. This suggests that good practice for interface design of any CAQDAS should be to make codes as accessible and visible as possible.

This early in the coding, it is essential for me to be constantly thinking about what codes I'm using and if there are any gaps in my codebook. The most effective way to do this is to have my codes always on my screen as I'm reading through a source/interview. The NVivo interface does not do this by default... I need to select "Nodes" in the bottom left to bring them up after I've opened my source, and then make sure that the "Nodes" folder under nodes is opened (and then I might need to expand specific nodes if I have codes and subcodes, etc.)

It is perplexing that the designers of the software would de-emphasize codes in this way (Figure 4.4). Perhaps it was done to emphasize the many other functions NVivo supports for the organization of mixed methods research data. Nonetheless, it is an impediment for researchers involved in qualitative coding in

the manner described by Strauss and Corbin (1998). My own solution to this problem was effective, if quaint: I had printed copies of my codebook pinned to the walls of my office cubicle (Figure 4.5).

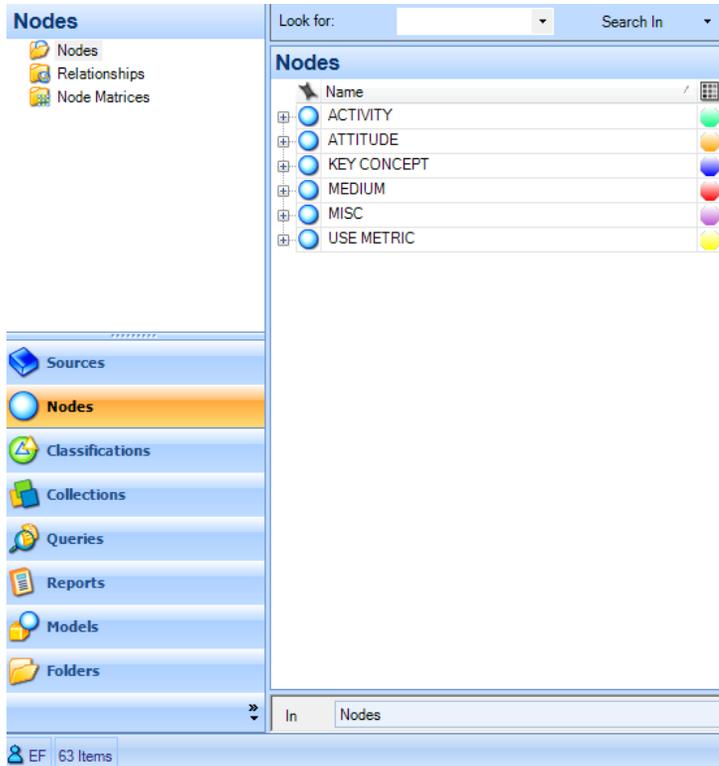


Figure 4.4.
*Accessing “Nodes”
in NVivo 10.*

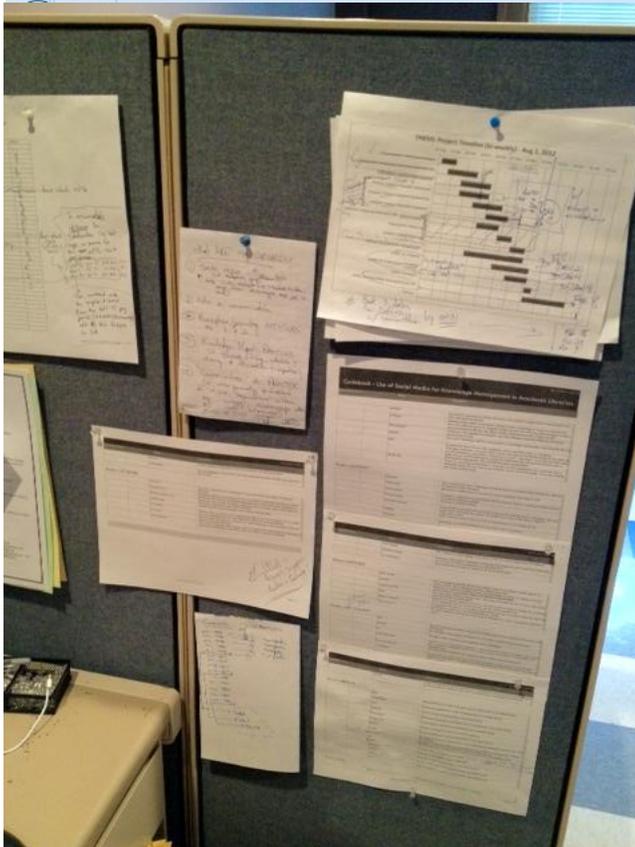


Figure 4.5.
*Cubicle wall
containing
print copy of
working
codebook.*

A fourth and significant source of frustration was NVivo's design of the memos function. More specifically, I found the manner in which memos linked to interview transcripts quite frustrating:

Apparently, the NVivo developers never anticipated that anyone might want to link multiple memos to a single source, or vice-versa, as they have limited linking to a 1-to-1 level.

In addition to this, linking was restricted to the document-level; I could not link a memo to a particular segment of text in a transcript, and instead was limited to linking to the entire document. One way around this was to use "relationships", a function distinct from "linking"; "relationships" allowed me to connect different sources using three types of relationships: "associative", "one-way" or "symmetrical". Technically, it was then possible for me to link multiple memos to a single interview by creating "associative" relationships. This function demonstrated the same limitation as "linking":

I can't relate a selection from a source (document, interview) to a memo, but rather I'm forced to relate the whole source. And I'm really aggravated that, because of how NVivo is designed, I have to make this distinction between "relate" and "link".

My solution, as I will discuss in a moment, was to rely more heavily on annotations.

In my evaluation of NVivo as CAQDAS, my journal memos lingered on two additional design functions that I considered critically in the context of the coding process, particularly in the ways they might permit me to move past the limitations described above.

The first function can be perceived as both an advantage and a limitation: the ability to import audio and other multimedia for analysis. This seems like a

great benefit, particularly if the audio can be combined with the transcript text. The layout of a source document that is an audio or video imported into NVivo is different than that of a text document, however. The designers assumed that the best way to render a text-based analogue to the audio within the software was as a table. This design suggests a very specific way of undertaking transcription. The table is separated into two columns: “timespan”, which links a row to a segment of the audio file, and “content”, where the transcript for that segment is saved as a value. When I attempted to import a completed transcript into the table, it forced it into rows; I was given the option of separating rows by timestamp or by paragraph break. My transcripts did not include timestamps as markers, and paragraph breaks were used to indicate a change in speaker. Still, by choosing the second option, my transcript populated in the table with question and answer appearing in sequence under the “content” column. The “timespan” column remained blank, but I could manually go through my transcript to assign timespans to each row/segment. The separation of question and answer posed a problem for my coding, since I tended to code passages of interviews with question and answer together. This was invaluable during retrieval, since it allowed me to look at a single coded reference and understand the context. This imposed spreadsheet design is incredibly cumbersome if you have already completed transcripts of the multimedia file prior to using the software, but clearly could prove useful if the transcription were completed using the software. It does, however, pose a deeper, methodological question that is worth contemplating. Namely, “does thinking of your data in the form of a spreadsheet or table affect the interpretation?”

...it forces you to consider the data in arbitrarily separated units (quite often, when I code, the same concept might flow over two or three answers... Structuring the data into rows breaks my engagement with the content every time I reach the end of an answer.)

Clearly the designers did not perceive a problem with the separation of interview data into table rows; this suggests a lack of understanding for the needs of qualitative researchers. Incorporating multimedia into the analysis can certainly prove valuable, especially when exploring the interaction between interviewer and interviewee for a more complete sense of how certain stories emerged from questions. But the drawbacks presented by the software must be given due consideration. Ultimately, I decided not to use this feature, since the problem it posed for coding was too great to ignore.

I have discussed the second function in different contexts throughout this chapter, but it is worth emphasizing once more, particularly as it emerged from my journal: annotation. Annotation became an activity that was central to my analysis, significantly supplanting “memo-ing” (as “written records of analysis”, Strauss & Corbin, 1998, 217) by filling the gap created by the limitations of the memo function in NVivo. Annotation had its own limitations within NVivo; each has a size limit of 1024 characters, and it cannot be indexed through coding the way that other documents—such as interview transcripts and memos—can. As I mentioned above, however, the second limitation at least could be circumvented if necessary. Regardless, annotations ultimately served a number of essential functions: 1) as a source of overarching themes; 2) to evaluate the need for new codes or categories; 3) to link to specific segments of interviews that serve as valuable examples; 4) to suggest intersections of codes for the creation of queries to retrieve further examples that are relevant to overarching themes; 5) as contextual markers when retrieving coded segments, to evaluate the quality of the information. As the coding progressed, however, the number of annotations increased, thus increasing the amount of data I was generating. This posed a problem of too-high recall:

if I have between 20-30 annotations for each
interview, between 20-200 words ea, on all manner
of themes, many of which recur (so that I might
have, say, 5 or more annotations in a single

interview that deals with a particular issue or concept), that's 280-420 annotations to sort through for the whole set-- potentially as much as 40,000 words worth. I have to read through all of that, parse it, and decide what's relevant and what's not.

In the end, I was forced to limit the amount of "parsing" of annotations to the "by hand" coding described above. While it might have been more effective if there were an easier solution for indexing annotations in the software, my case shows just how valuable this function of NVivo can be.

4.8.4. Conclusions

The process of qualitative coding can be both unbearably frustrating and exceedingly rewarding. The autoethnography of my journal reflections exhibits both of these truths, while providing specific examples of how they are manifested in the coding process. This section interpreted my journal memos first as personal reflections that addressed my own assumptions about my research, then as epistemological reflections that questioned the nature of knowledge and how it is applied in the analytical process of coding, and finally in the specific context of CAQDAS, and how NVivo both facilitated and challenged the interpretation of interviews. If there is one message that new researchers should take away from this examination, it is that CAQDAS is a tool to facilitate analysis, not a method in itself; the criticisms leveled at NVivo are meant to highlight this important point. CAQDAS are becoming increasingly important in qualitative research, particularly when the research includes massive sets of data; it can be invaluable in the organization of knowledge and the retrieval of results. But the analysis still relies on the researcher, whose personal and epistemological engagement with the research subject and data he has collected will guide him to a relevant and reliable interpretation.

4.9. Summary

Kvale (1996) indicates that a common question—and source of fear—among new researchers is the 1,000-page question: “How shall I find a method to analyze the 1,000 pages of interview transcripts I have collected?” (176). As Kvale explains, this is the wrong question; a better question would be, “how do I go about finding the meaning of the many interesting and complex stories my interviewees told me?” (179). A potential answer is presented in the method of qualitative coding. Coding, according to Miles and Huberman (1994, 58), is astringent, meaning that it allows you to categorize your data according to relevance. They use the term “data reduction” to refer to this aspect of refining your data for interpretation (Fielding & Lee, 1998, 40-42); “reduction” re-emphasizes the quantitative problem Kvale notes in the initial question, and tries to get away from. A better word, particularly given the discussion surrounding it in this chapter, is ‘relevance’. Coding allowed me to sort through the many interesting and complex stories shared by my participants, and organize them in a manner that was most *relevant* to my research questions.

This chapter expanded on the ‘nuts and bolts’ research methods described in Chapter Three to engage in a methodological discussion about knowledge organization and qualitative coding practices. I started by describing my coding process in the context of Given and Olson’s (2003) Knowledge Organization (KO) Model. Within that context, I provided a description of my own ontological-relational model as a variation on Given and Olson’s approach. I then explained in great detail how I applied such strategies as ‘open coding’ and ‘axial coding’, as well as linking, annotating and memo-ing, throughout the coding process. After describing the development of my codebook, I devoted the rest of the chapter to the autoethnographic journal of my experience of the coding process. These reflections were shared for the benefit of new researchers, as an example of the implications and considerations involved in qualitative analysis.

In the next chapter I will return to the primary purpose of this thesis by reporting the results of fourteen interviews with academic librarians on their use of social media for knowledge sharing.

CHAPTER FIVE: RESULTS

This chapter first addresses the question of which (i.e., *what*) modes of communication are common to the shared knowledge practices of academic libraries, and more importantly within that context, *how* social media are being used for knowledge sharing. These findings are primarily derived from my USE METRIC category of coding, which captured participants' evaluations on their own methods for knowledge sharing in their work at the library. This layer of coding measured each identified mode of communication based on ease of use, frequency of use, reasons for use or affordances, usability issues or disadvantages, and examples of use. Interspersed with these results, I also explore the question of *why* social media are used—or not used—by the participants and in their libraries through the intersection of objects/media and practices with references collected under the ATTITUDE and KEY CONCEPT categories.

Based on the description above, it is important for me to clarify that this chapter is structured in a manner that is somewhat unusual compared to the traditional reporting of qualitative research findings. Conventionally, findings in qualitative research are rhetorically structured around themes and combine results and discussion. For example, I might have had a section in this chapter entitled: “Fear and trepidation in the professional use of social media: the perceived danger of airing opinions in a virtual public space”, exploring the emergent theme around the anxiety of using social media in the professional context. However, given the focus on organizational social media use in the context of knowledge management, I have structured the reporting of interview results around social media as *tools for knowledge sharing*, and explored themes through the characterization of use around specific social media implementations as described by participants. Themes emerge from this reporting on the basis of the theoretical framework generated during the process of analysis, and are summarized in the following chapter (Chapter Six, “Discussion”) in section 6.1: “Emergent Theory”,

and further explored in subsequent sections. This ‘bottom-up’ approach to narrative reporting of results depicts the trajectory for the abstraction of themes in a manner that mirrors my analytical approach, rather than presenting discussion around themes as if generated fully-formed (a problematic convention in qualitative reporting). At the same time, the structuration around *tools* as implementations manifests how the organizational norms, expectations and anxieties of *users* define the medium, and have the power to transform how a given tool is perceived within a given organizational culture. In this sense, the report of findings moves narratively from the concrete to the abstract.

In Chapter Three (“Research Design”) I discussed the interpretivist approach to analysis, and what that means for this study in terms of the construction of meaning from interview data. Kvale (1996) describes this approach using the “traveler’s metaphor”—a method of producing findings in which the interviewer is a “traveling reporter who reports stories in which meanings are created through conversational interactions” (226). This matches the constructivist approach in Grounded Theory (GT) that perceives data and analysis as co-created from the shared experiences of researcher and participants (Charmaz, 2002, 677). The results that follow report the different ways in which participants share organizational knowledge, structured narratively around the specific accounts of participants, to provide an overall sense of how the Grant MacEwan and University of Alberta librarians perceive and use each medium. The reports begin by describing implementations of the four types of social media identified and described in Chapter Two. Each of these sections includes discussion of the results that compares this study’s evidence of actual use with the promises and examples found in Library 2.0 and KM literature. Each section concludes with a summary and analysis of participants’ attitudes and personal use of each social media type. The use of other common modes of communication discussed in interviews—such as email, face-to-face interactions, telephone, and instant messaging—will also be reported, in order to compare with the results of these social media tools; it is important to understand what social media represent in terms of actual use among the sampled sites, and their role in contrast to more

traditional and/or established knowledge sharing practices. In some cases, social media replace existing methods; more often, they are implemented merely as a supplement to the pre-established ways for sharing information. The use of other Web 2.0 tools that contribute to knowledge sharing but do not neatly fit the category of ‘social media’—such as collaborative and cloud computing software—will also be discussed. A summary at the end of the chapter will review findings, and describe the focus of the discussion to follow.

5.1. External and Internal Communication (and Everything In-Between)

Before proceeding with the results, it is necessary to clarify this study’s position on a distinction often implied but rarely addressed in knowledge management (KM) literature. Organizational knowledge practices, in the context of KM, are typically characterized as forms of ‘internal’ communication. This means that the creation and sharing of organizational knowledge is oriented inwardly, occurring only with the members of the organization (i.e., staff and managers) (e.g., Grudin & Poole, 2010; Huh et al., 2007). This assumption is appropriate if a definition of ‘organizational knowledge’ is limited to operational or procedural knowledge. The distinction, however, becomes increasingly problematic if the definition is expanded to include all knowledge that relates to the organization, including, for instance, the skills and services the organization provides to external clients or users, or the participation of external clients in the delivery of services. The relationship between members of an organization and external clients can also be surprisingly nuanced, further problematizing the distinction between ‘internal’ and ‘external’. Students and faculty are considered the ‘external clients’ or users of the academic library, but they are also members of the institution (consider, for instance, how academic libraries distinguish between student and staff borrowers and ‘external’ borrowers, i.e., members of the public). For liaison or embedded librarians, the ‘external clients’ they interact with and support may seem more like colleagues than other librarians. On the other hand, the distinction can prove dramatic, particularly in a discussion about social media implementations in the library. The Library 2.0 literature is oriented toward the external user rather than the internal user, which risks underserving the

internal user. And it is, indeed, significantly the purpose of this study to explore that dynamic in organizational social media use, as Chapter Two made clear. The participatory model of Library 2.0 is one that is not easily reconciled with internally oriented KM principles. Both, however, share the assumption that knowledge is easily defined by an external or internal orientation.

This analysis must take into consideration the distinction between ‘internal’ and ‘external’ communication and knowledge sharing. Nevertheless, rather than focusing only on ‘internal’ uses the study examines the participants’ social media use from all angles, acknowledging that the clean separation between these two orientations is a false assumption. The distinction between ‘internal’ and ‘external’ communication will be made explicit in the results below when it is relevant to the discussion. With the understanding that knowledge is a “fluid mix” (Davenport & Prusak, 1998, 5), however, it is important to indicate here that such a distinction is not always germane, or even possible.

5.2. Blogs

Several examples of blogs arose from interviews. Most of the examples that dealt with the exchange of organizational knowledge were internal blogs, although two were less easily defined and ostensibly external-facing. Internal blogs were integrated into the two library intranets relevant to the study sample: Grant MacEwan’s Library Intranet Portal (LIP) and University of Alberta Libraries’ Staffnet. Both use the Drupal content management system (CMS) and possess functionality to support internal blogs/blogging. Both intranets and the ways in which they are implemented and used are discussed at greater length in the ‘Intranet’ section below (5.4). This section will address them in the context of internal blogs, and the successes and failures described by participants. The two examples of external blogs will also be discussed briefly in this section.

5.2.1. The LIP blog

Grant MacEwan’s LIP blog was used regularly by all participants as a “notice board” for day-to-day updates at the reference desk and to provide

announcements for the library Reference Department staff and Campus Library staff (Alex; Appendix Five, “Project Completion Report”). This function went hand-in-hand with the primary function of the intranet, which was to serve as a “process-based, well-organized framework for internal information and documents” for the Reference Department staff (Appendix Five: “Project Completion Report”). Among the benefits discussed in interviews were how easy it was to add content, and how it facilitated quickly scanning on a daily or semi-daily basis for updates relevant to the main campus’s reference desk activities. Some participants indicated that the search function did not work very well, however, and so it was difficult to retrieve content that became buried after a few days or weeks. The LIP blog was accessible to librarians at all four campuses, and according to project reports was meant to “improve communication, teambuilding, and community among staff” (Ibid.). While participants reported that this goal was achieved at the main campus library, it was less successful in engaging the other campus libraries and library staff. Deirdre, a librarian at Campus B, said:

It doesn’t meet my need. But... we could have a totally different blog here, and it wouldn’t meet our need. Because we’re so close. You know, face-to-face makes sense for us.

Carol, a librarian at Campus C, similarly pointed out that content on the blog was perceived as less relevant to her campus library staff, though she indicated that she encouraged staff at her campus to read the blog even if they were not in a position to comment, since it kept them informed on events at the main campus. She contended that the “small pieces of information” that might seem only useful to staff at the main campus could often be applied in the campus library context. Interestingly, neither of these participants—nor any of the other participants from the MacEwan site—considered the blog as a method for facilitating dialogue among the staff at distant campuses and system-wide, despite the fact that this function is implied in project report goals (Appendix Five).

Several participants noted that the blog had the potential for greater use in this regard, but that it simply was not being implemented in that way:

You know, I read, I keep track of a few blogs, and in my mind they're completely different categories. I mean, this is just sticky notes on a wall, essentially. (Alex)

For Deirdre, email already answered the need for communicating with colleagues beyond her campus. With email, she was sure that “people will see it, people will read it”. Jackie, a recent addition to the staff still learning the communication practices of her colleagues, had perceived as much in her time there:

I don't feel that there's an expectation that people participate in conversation on LIP, generally. I don't feel if I don't read a post that that's going to be inconvenient, or it's going to come off where people are like, “oh, you didn't read it?”

When asked, only one out of the six participants interviewed indicated that the LIP blog was an essential resource she used to connect and communicate with her peers (Elaine). Meanwhile, all participants agreed that it was an essential resource to access day-to-day information about the reference desk.

The LIP blog had been preceded by a Wordpress blog. According to participants, the Wordpress blog was abandoned because it did not conform to the University's security policies, and saw only infrequent use—perhaps because, as one participant put it, “nobody could remember the ID and password!” (Carol). According to Deirdre, the earlier implementation had been even less relevant for her campus staff.

5.2.2. *Internal blogs on Staffnet*

Running a similar version of the Drupal content management system, University of Alberta Libraries' Staffnet—used by both the Rutherford Library and the Cameron Library—was capable of the same blog functionality as Grant MacEwan's LIP. However, not all participants were even aware that this function existed on the intranet, and those that were had very little complimentary to say about the implementation of blogs hosted there. Nevertheless, several examples did come up in interviews. At least three internal blogs exist or have existed on the Staffnet: (a) chief librarian's blog, (b) Rutherford library blog, (c) Cameron library blog.

Gloria indicated that, to her knowledge, the chief librarian had posted once to her blog. In her experience, staff only used the internal blogs to “post meeting minutes and things like that,” and that these were never platforms to engage users in dialogue or to elicit conversation. Ivonne shared the following about the implementation and ultimate failure of the Rutherford library blog:

For a while it worked, when it was new and everybody, you know, had a little meeting about it, and contributed. But then it got busy, and you'd send out an email because you wanted to know right away, and you'd think, “oh, so and so doesn't check the blog every day, and so and so doesn't check it every week.” So, it turned out email just worked in our community, and has continued to.

Posting to the blog seemed to take too long when sharing important information, and email turned out to be more reliable for a prompt response. Lee indicated that there was a similar blog for the Cameron library, but he had never contributed to it. Another participant corroborated this, saying:

We had a blog, for a few years. But again it was a matter of, there were maybe two people who were

looking at it on a regular basis. It just wasn't... For whatever reason, it never fit into the workflow.

(Nancy)

Similar to the Rutherford library blog, it seems that the Cameron library blog was never fully adopted by staff. The reasons for these repeated failures remain unclear. Nancy suggested that the lack of success might be related to the age of staff members: "Using some tools, like blogs, and wikis, and... sort of, online communities... we've got that generational issue to contend with." This does not correspond with the case of Lee, however, a Cameron librarian and one of the most active social media users interviewed, who is also the second oldest participant. But at the heart of these stories is a shared perception that these blogs do not add any significant value to internal knowledge practices. None of the librarians interviewed indicated that they had recently read or contributed to these or any other internal blogs.

5.2.3. Faculty blogs and Library News blogs

Two additional blogs at the University of Alberta were discussed. The first was the defunct University of Alberta Libraries "Library News" blog, a public Wordpress implementation that shared information about events and new resources at the Libraries (available through The Wayback Machine at: <http://web.archive.org/web/20110723165036/http://blogs.library.ualberta.ca/libnews/>). The second is the "News from the University of Alberta Engineering Librarians" blog, sharing information about the library relevant to students, researchers and staff in the Faculty of Engineering.

"Library News" was taken down on July 12, 2011, after an extended period of irregular updates and lack of readership. Gloria characterized the blog and its ultimate demise as follows:

...It finally got taken down this summer, like it just got taken out behind the wood shed and put out of its misery because it never got updated and no one

ever interacted with us through that. [...] If you have a blog, an official library news blog and it gets updated twice a year and nobody every comments on it, then that might be an example of something that's not very social. The problem with a lot of these social tools is that they are very easy to set up and "oh it looks great, look what we launched: a new blog!" But then the effort has to be maintained over time.

This colourful description identifies two goals the administration had in mind for the blog: 1) to provide accurate and timely information to users and 2) to encourage the interest and participation of its readership. These goals could be considered universal of any similar implementation, either internal or external. 007's description also summarizes the double-edged nature of blogs as a low-threshold technology and the challenge of keeping it updated and relevant, as identified by Rodriguez (2010) and Costello and Del Bosque (2011, 146-147). The obvious conclusion is that, in the end, "Library News" failed to meet that challenge. Soon after it was taken down, the blog was replaced by the University of Alberta Libraries Twitter feed, which has proven much more successful.

"News from the University of Alberta Engineering Librarians" (<http://blogs.library.ualberta.ca/engineering/>) is still online, although it was last updated April 2, 2012. Lee reported that, because it was difficult to access from the Faculty of Engineering website it did not get used very much. The Engineering library subject guides (or LibGuides), on the library website, Lee suggested, were far more useful for students and faculty seeking information on library resources or wishing to interact with the liaison librarians.

There are at least two other active external-facing library blogs at the University of Alberta: the Coutts Education library blog, renamed "Between the Stacks" (<http://blogs.library.ualberta.ca/ednews/>) and the Bibliothèque Saint-Jean "Biblioblogue" (<http://blogs.library.ualberta.ca/biblioblogue/>), which have

experienced mild success in their respective Faculties. Neither of these were mentioned in interviews.

5.2.4. How are blogs being used in academic libraries?

With the examples provided in interviews it is possible to evaluate the blog as a method for organizational knowledge sharing in the sampled libraries. In the case of the LIP blog, the option for asynchronous communication offered by the medium proves quite helpful in communicating information based on reference desk practices at the main campus library. Short-term IT issues, such as student printer/copier service failures or system outages are announced and tracked efficiently through the blog without generating a clutter of email. Staff can access this information on their own time, in their offices or when they start a shift at the reference desk. Similarly, important student assignments can be posted on the blog with helpful resources collected by the subject librarian, so that staff working on the desk can be optimally prepared to help students. This corroborates the claims made by Casey and Savastinuk (2007, 79), discussed in Chapter Two (“Literature Review”, section 2.3.1). On the other hand, this knowledge is usually only relevant to a subsection of the staff—the Reference Department staff at the main campus—indicating that the benefit of asynchronous virtual communication offered by the blog is not being used to its full potential. This finding may be due to the fact that email, as an asynchronous medium for communication, has become so engrained in organizational practice that staff cannot perceive a need for alternatives. Evidence from the interviews similarly suggests that use of the LIP blog is not sophisticated enough to replace face-to-face meetings, as Casey and Savastinuk (2007) suggest, which are by comparison a synchronous medium for communication. This finding could imply that there is a lower threshold on the complexity of information that can be effectively shared using a blog, in which the nature of it as an asynchronous medium for communication becomes a detriment rather than an advantage. Certainly, there are other elements at play that limit the effectiveness of the blog, not least of which is the staff’s perception of the tool as being limited to the function of “notice board”.

Interestingly, the Staffnet blogs appear to have attempted to replace, or to at least supplement meetings by posting “meeting minutes and things like that” (Gloria). The poor adoption rate indicated in interviews provides evidence that these attempts were not successful. None of the Staffnet blogs discussed appear to have been intended as a method for two-way communication, but rather as a uni-directional medium meant to disseminate knowledge in the form of news, announcements, and reports. The LIP project completion report indicates that two-way communication (what I have referred to previously as ‘conversation’ or ‘dialogue’) was a goal of the implementation (Appendix Five, “Project Completion Report”), but interviews reveal that it has never been consistently used in this way, being reserved primarily for operational announcements rather than to host a forum for discussion. Similarly, the external blogs of the University of Alberta Libraries had the goal of engaging its student users by sharing news about its events, but experienced very little success in that regard. In this case, the problem may lie with the implementation itself, rather than with user perception; the lack of regular and frequent posts and lack of visibility on local websites are barriers to the success of any blog (Farkas, 22-26).

There is evidence that ‘horizontal’ communication (staff member to staff member) and ‘vertical’ communication (management to staff member, staff member to management) is afforded by the blog implementations discussed in the participants’ examples. The Staffnet “chief librarian’s blog”, for instance, would represent ‘vertical’ communication, at least uni-directionally “management to staff member”. The LIP blog is primarily representative of ‘horizontal’ communication, again with only limited two-way communication. More complex communication requiring a dialogue, occurring horizontally or vertically, is still achieved through email and face-to-face meetings. Again, this affirms the claim made in Library 2.0 that blogs *can* facilitate these two levels of communication, while demonstrating that the mere existence of blogs does not promise that they will be used as such (Casey & Savastinuk, 2007, 79-80).

There is no evidence from interview results that sustained interaction between different organizational levels (i.e., the branch/unit, department and library system) is present in examples of use. The LIP blog supports a community of librarians ostensibly at the department-level (i.e., Reference Department and Campus Librarians, to the exclusion of Borrower Services' staff responsible for circulation, cataloguing and elements of ITS), and in reality at the branch-level of the main campus library, through the sharing of knowledge related to work at the reference desk, and occasionally in other aspects of their work providing instruction and collections management. It has become, in this sense, an important knowledge sharing practice, but limited to a specific context. The project report indicates the next step of expanding the intranet implementation to all library staff (Appendix Five, "Project Completion Report"); the LIP blog was made accessible to all staff as of December 20, 2012, including a section for Borrower Services. It is possible that, since this change, the blog can now support community at the system-level. Since all interviews had been completed prior to this change, more data would need to be collected in order to study its effects. The blogs on Staffnet are system-wide by virtue of being hosted on the library system's intranet. Actual use, however, would suggest that it fails to support community of any kind, given the poor rate of adoption among interview participants. These findings indicate that blogs as an implementation are not viewed as necessary or even useful for supporting multiple internal communities, challenging the claim that they can support a local community of librarians or staff as easily as a department or system-wide organizational communications (Casey & Savastinuk, 2007, 79-80).

A similar claim proposed by Library 2.0 indicates that blogs can support the interactions related to local issues and big-picture discussions alike (Ibid.); The LIP blog addresses local issues in a limited way, by ensuring that Reference staff are updated on important news relevant to their work. Despite Alex's assertion that the blog is essentially just "sticky notes on a wall", some limited interaction does take place. Four of the six MacEwan participants indicated that they had replied to blog posts, but usually this was just "to add information" rather than to engage in a conversation (Beth). When asked, participants indicated

that such conversations took place face-to-face; five of the six participants admitted that blog posts had sparked dialogue and debate offline. In this way, the LIP blog does play a secondary role in facilitating local interactions. On the other hand, the fact that access is limited to a cross-section of the library system's staff, and only relevant to certain members of that cross-section, makes it impossible for 'big-picture' discussions to be hosted, or even facilitated by the blog. The lack of use identified in interviews with the Cameron and Rutherford librarians indicates that the Staffnet blogs are not adequate to the task of supporting interactions at any level. The reasons for this will be explored in the next section on the perceptions and attitudes of academic librarians vis-à-vis blogs.

5.2.5. Perceptions in personal use

All of the participants were familiar with blogs and had used them at some point in their work and in their lives. Certainly, some more than others:

Elaine: I read my dentist's blog, because... I've been her patient for a long time, so she has a blog which I subscribe to. But don't subscribe to any other blogs. Nothing.

Eric: So that's it. It's just the one blog.

Elaine: Yes! Yeah. (laugh)

A number of participants, however, did maintain their own personal and professional blogs, or had in the past (Beth, Freddy, Karen, Lee and Max). All participants noted that they currently followed blogs, either for personal or professional reasons, although the degree of engagement with the medium suggested in their accounts varied widely. Several participants were quick to make the distinction between professional and personal (Beth, Ivonne, Karen and Max), emphasizing that the blogs they followed were rarely or not at all related to their professional lives, reserved rather for personal hobbies and interests. "Tumblr I just have just for fun," laughed Karen. "So I can post up whatever

stupid thing I feel like.” Max emphasized this distinction more explicitly, saying, “I follow political things, like blogs and stuff like that, rather than professional blogs... I sort of try and keep a bit of a separation between my work life and my [home life].” Ivonne, who read blogs for both professional and personal reasons, described her approach to participating on blogs:

Eric: You mentioned that you followed certain blogs. Do you ever comment on the blog posts?

Ivonne: Yeah, sometimes. Although, I don’t know if I comment on... I don’t very often follow much of the library world. I’m more likely again to comment on something that’s personal interest, not a blog like that.

Others, like Freddy, gave examples of blog use that were exclusively in the professional sphere. Freddy’s story was especially poignant, because it revealed the cynicism that comes from having earnestly tried and failed in gaining traction on social media—what I described in the previous chapter as “critical mass”:

Eric: ...you mentioned that you started a blog a couple of years ago but it didn’t go anywhere?

Freddy: No unfortunately. I don’t know why really. I don’t know, maybe it’s the format... I still want to bring... librarians together... But I haven’t managed to find a form for that, and I did meet with [librarians] at [Canadian Library Association conference] a few years ago, and... I asked them... “What’s the best way to bring us together? Is it a blog, is it a wiki, is it something else?” And they said, “Oh yeah, blog sounds like fun, that sounds good.” So I created the blog but nobody ever... I

think one person participated... But there is that willingness to get together, initial willingness but then, I think, after that life just takes over... I'm still looking for that way to bring... librarians together and for us to stay together and to communicate, to build a community of practice, but I don't know how to do that in an effective manner.

Earlier in the interview, Freddy implied that blogs are no longer a popular medium for socialization: "...blogs used to be popular in the library scene but for some reason they've sort of disappeared from my radar..." His experience with blogging, no doubt, has contributed to this opinion of the medium.

Still other participants used blogs for both personal and professional reasons, in distinct ways. Lee was active on both a personal blog—which combined professional interests with his personal interests as a musician—and professional blogs related to his work as liaison librarian. Lee is an example of someone who is confident in his personal and professional identities, and the opinions he holds. Jackie, a younger librarian still new to the profession, expressed a fear of participating too actively on blogs, and social media more generally:

I have some trepidation about [blogging]. I'm sort of more in the watching, learning mode. I don't feel like I'm ready to start putting stuff out. ...If I was going to do a blog it would have to be a "my-view-on-things" blog, and I think that's just scary to do.

Despite this "trepidation", Jackie indicated that she actively read blogs related to her professional and personal interests, and had at one point maintained her own "travel blog". She also indicated that blogging (as well as using Facebook and Twitter) was "absolutely essential" in terms of "gathering support" in the academic community and connecting with people in the same field. Jackie

also shared insights into how internal blogging had been successful as a way of creating an organizational community across branches, in her previous work at a large public library system.

Helen, an older, more experienced library administrator at the University of Alberta, had a much lower opinion of blogs.

I find it really interesting that people have time to devote to blogs and do all of that... But the quality of the information they're communicating is sometimes dubious. From my perspective. ...And that's only because, you know, I have a certain base knowledge and understanding and access and network that I've developed, right... myself, over many years, so... My network and way of communicating [has] developed differently than maybe a librarian who's starting right now.

Helen indicated that she used blogs occasionally, if she wanted information about the current state of an issue, and she would access these blogs by searching the web, rather than maintaining subscriptions to specific blogs or RSS feeds. However, this use was limited to when she needed additional support in scholarly work, where she relied primarily on published academic and professional literature as well as the opinions of individuals in her network she considered knowledge experts. For this participant, there seemed to be a blurring of the personal and professional, at least in terms of blog use; she mentioned two instances of blogs she followed for “personal” reasons, but one of these was for a project she helped organize in the local library community, and the other belonged to her neighbourhood community league. Nancy confessed that she should use blogs more, but did not have time; similar to Helen, she obtained the kind of current information she perceived in blogs through her personal network, by attending professional conferences and workshops in the greater library and public service community.

The opinions and views on personal and professional use shared by participants Freddy, Helen, Ivonne, Karen, Max and Nancy are representative of the majority opinion on blog use at the University of Alberta. Given this tension over the value of blogs in the organizational and professional contexts, it is not surprising that the internal blog implementations at this site have seen such limited success. Similarly, the same tension exhibited in the opinions of Beth, Elaine and Jackie may account for the limitations observed in the LIP blog.

5.2.6. Findings

- Blogs are used externally and internally to the studied libraries.
- Interaction on blogs is primarily limited to one-way communication (i.e., announcements, updates), and are rarely used for two-way communication (i.e., conversation or ‘dialogue’).
- Blog implementations are being used primarily for asynchronous communication.
- Internal blogs are useful for supporting communication in small work groups or units (e.g., LIP blog and the Reference staff at main campus library), but do not seem effective for communication at a system-wide level.
- External blogs require an ongoing commitment from staff to maintain in order to be successful.
- Most participants used blogs in their personal and professional lives
- Some participants expressed a view that blogs are no longer a popular medium.
- Participants’ attitudes toward blogs suggest that they are more effective for personal and divertive uses (i.e., “just for fun”, Karen) than for professional uses, and especially organizational uses.
- One participant expressed “trepidation” of sharing their professional opinions on blogs (Jackie), which—if shared by other librarians—may account for the overall lack of adoption in professional and organizational contexts.

5.3. Wikis

Three examples of wikis were discussed in interviews. The principal of these was the ‘Online Public Service Manual’, a wiki developed using MediaWiki open source software upon which the popular website Wikipedia is based. The ‘Online Public Service Manual’ is a system-wide resource for the University of Alberta Libraries, which documents shared processes for staff. The ‘Online Public Service Manual’ was used by all participants interviewed from the Cameron and Rutherford libraries, to varying degrees. The second example of a wiki arose from the interview with Deirdre, librarian at Grant MacEwan’s Campus B library. The wiki was used only by library staff at that campus, and limited to processes and procedures used by circulation and IT. Deirdre was the only participant from the Grant MacEwan sample to indicate use of this innovation. The third example was only briefly discussed with Jackie, and represented a wiki used by staff at Grant MacEwan Library for planning the Workshop for Instruction in Library Use (WILU), which the University hosted in 2012. This section will describe how each of these wikis was used by librarians.

5.3.1. *The ‘Online Public Service Manual’ wiki*

This organization-wide wiki was in the early stages of implementation during the interview process. Interviews with the Rutherford staff took place in the fall of 2011, when development of the wiki was still underway. Gloria, who was one of the staff members responsible for creating content for the wiki, characterized it as a “system-wide effort to articulate public service information”. She indicated that this was challenging in a system as large as the University of Alberta Libraries, because it requires identifying and standardizing information across all branches. This effort was “collaborative” since she had to work with the different branches to develop relevant content. She also discussed how it was intended to contribute to the knowledge sharing practices of the library; providing the example of chat reference as a task shared across all branch libraries, Gloria explained, “if you are a new staff I’m going to tell you to go read those pages in the wiki and teach yourself how our [chat] system works.” Interviews with the

Rutherford staff (Freddy, Gloria, Helen and Ivonne) reflected the fact that the project was still in development. Freddy recalled finding password information he needed for a reference consultation by navigating through the Staffnet to a page that looked “like a wiki”. Ivonne observed that she had found errors in the information provided in the online manual:

Sometimes you’ll check something and think,
“Whoa! No, that can’t be right!” So you contact a
colleague by phone anyways, and say, “OK, P—,
did we really change the external borrowers’
policies... to say this?” “No, no. No that’s old.”

When asked if she had tried updating content in the manual herself, Ivonne responded that she should but that she did not take the time. This suggests that collaborative editing practices shared among all staff around the wiki were not yet established at the time of the interview. Helen noted that there were “point people” assigned to create content—like Gloria—and so the publishing of material on the manual was limited to a select few from each branch library. In this sense, a gatekeeper aspect to development may have contributed to Ivonne’s view that, ultimately, it was not her responsibility to make corrections on the wiki. Such an approach would seem to undermine the usefulness of wiki as a collaborative method for the documentation and dissemination of explicit organizational knowledge. When asked about her observations of how the Rutherford staff used the wiki, participant Helen confirmed, “I don’t really think it’s been around long enough for people to have developed any sort of pattern of ways to use that.”

Nine months later, in the summer of 2012 when the interviews with the Cameron staff took place, the wiki had become more established as a reference tool. Use was still limited; Karen said she only used it “about ten percent” of the time, and only when she had already asked a colleague in-person and had not reached an answer through discussion. Lee remarked that he had found it useful for finding passwords while working at the service desk, but that he rarely used it

when he was not working the library service desk. A new manager at the library, Max admitted that he did not use it as much as he should: “It usually takes me awhile before I sort of muggle on to something and then I use it a lot... I had to deal with a circulation problem, and I realized afterwards... that’s what I should have used. And I didn’t.” It is clear that the library staff was still in the process of developing practices around the wiki’s use. The challenge of fostering such “habits” was discussed with several participants. As public service manager, Nancy discussed the need to set up an expectation among staff working at the service desk, so that “the first thing you do is open the desk email, open the desk calendar, open the public service wiki so that all of the communication tools are there in front of you.” The challenge, she admitted, was that individuals have their own habits for communicating and doing their work; as a manager, she wanted to avoid a situation where the wiki was the only method for accessing or sharing information about public service at the library service desk. She described this as a “chicken-and-egg” problem: if there’s no expectation of use, then staff will not learn to use it, but if staff do not use it the existing practices for sharing such knowledge cannot be improved. However, it seems that the attempt to instill such an expectation has been at least somewhat successful. Karen gave an example of how she had learned to refer to the wiki more often, thanks to the encouragement of her colleague at the service desk: “when I had questions about things she would say, “It’s in the manual!” And so, it’s always in my head that she’s pointing, like this, saying—the manual!”

Karen went on to describe how she accessed information on the wiki. Rather than perform a keyword search, she would navigate the links to frequently used articles on the left side of the wiki page. When asked about the discussion page function of the MediaWiki software, none of the participants could recall ever using it for the manual. The manual was a reference tool; any dialogue that occurred about policies or processes took place face-to-face in public service or committee meetings (Gloria and Karen).

5.3.2. *The Campus B wiki and WILU 2012 wiki*

The interview with Deirdre and the story of Campus B stood out from the Grant MacEwan set. As is evident from the results on internal blog use at Grant MacEwan University Library, the local environment of Campus B differed significantly enough from that of the main campus that the other librarians' posts were not considered relevant. Perhaps one reason the LIP blog was not perceived as meeting the "need" of Campus B staff was that they already had a wiki.

According to Deirdre:

Because we're such an odd duck with circulating A/V equipment, with supporting the Mac environment, we have a [Campus B] wiki where our techs... where I go, all of us go to check in. You know, that speaks to our specific opening and closing procedures. That speaks to our quirks with our till.

Deirdre indicated that she referred to the wiki once or twice a week, depending on how often she was at the shared service desk. The wiki appeared to be closely tied to desk practices, much like the Online Public Service Manual used by the Rutherford and Cameron librarians. She provided an example of a complex circulation process for issuing external borrower cards, that she and other staff might encounter "once a semester", and how the wiki facilitated work at the desk by providing step-by-step instructions. "So, I know where the information is when I need to go there." (Deirdre)

Jackie briefly described the WILU 2012 wiki, used by librarians involved in the planning of that event. The wiki was organized with pages for the different committees involved in the event. According to Jackie, she used it to upload documents and post notes to the people she was collaborating with on the project. When asked, she answered that the wiki was "not really a place to discuss things", but rather "static", more of a tool for reference and to store shared documents.

Neither participant indicated that these wikis were used for anything beyond reference and information retrieval, suggesting that dialogue between users took place through other media.

5.3.3. How are wikis being used in academic libraries?

With the examples provided in interviews it is possible to evaluate the wiki as a method for organizational knowledge sharing in the sampled libraries. One interesting finding is that there is no evidence from the interviews that collaborative web development figured prominently in the decision to implement any of the wikis discussed above. This is surprising, given that “co-construction of websites” is one of the four reasons for using wikis cited in extant research (Chu, 2009). The use of wikis for website development never came up in interviews. It is possible that the Online Public Service Manual contains some content regarding guidelines for the design of the library website, and more particularly the integration of chat reference into pages and LibGuides. It is less likely for that to be the case with the Campus B wiki, since it has a much narrower context, is limited to branch practices, while the MacEwan library website represents all branches as a single system. On the other hand, it is quite likely that the WILU 2012 wiki contained content regarding the construction of the WILU 2012 public website, which had to provide program information (including a call for papers), registration and accommodation information for attendees (<http://sites.macewan.ca/wilu2012/>).

On the other hand, the value of wikis to enhance information sharing within the organization or unit is clearly the primary reason for all three implementations discussed during interviews. Both the Online Public Service Manual and the Campus B wiki were specifically described as methods for documenting procedural knowledge related to public service, and participants provided numerous examples of how these implementations were used as reference tools. The WILU 2012 wiki similarly served this function as related to a specific event in time rather than around shared practices. This corroborates the results of Chu’s survey of academic libraries, which revealed “information

sharing” among librarians to be the most common reason for implementing a wiki (172).

The limit to the actual use of these three implementations appears to be when “information sharing” becomes *conversation* (previously described as ‘dialogue’ and ‘two-way communication’). Like the blog implementations discussed in the previous section, wikis were not a medium used for discussion, but rather facilitated dialogue that occurred in face-to-face meetings. Gloria hoped that someday the manual might host this level of “information sharing”, but that users were not there yet: “Right now we are really at the point where I’m training people on how to use MediaWiki. People have to have a certain degree of comfort and awareness with how the software actually works before they can... take part and participate.”

The ability to archive multiple versions of a document or article over time is one of the affordances that define the wiki as a medium (Chu, 172-173). It is perhaps significant then that the participants did not identify this as a reason for use, even when asked specifically if it was a personal consideration. In describing a better model for sharing the kind of information the Cameron librarians need for their work, Max said, “People are not going to go read a wiki log.” He maintained that a visual social interface like Facebook would prove far more effective in tracking changes over time than a wiki would.

5.3.4. *Perceptions in personal use*

Outside the perspectives shared in the accounts of the above implementations, the interviews revealed very limited personal use of wikis. Max shared that one popular public wiki, Wikipedia, had become an important part of his down-time after work:

I’m a big Wikipedia reader. I mean, whenever I’m watching something... or just thinking of something...I’ll look it up, constantly. And I get

into... following the track of something. You know, there's just so much...!

He later revealed that this was related to an abiding scholarly interest in Wikipedia, and research he was considering on the production of content using that platform. Wikipedia came up again in the account of Freddy, who explained that he had used it in facilitating instruction with Humanities students:

...When we do talk to students about Wikipedia we just let them know how to use it wisely. And there are courses... that use Wikipedia; their philosophy is making Wikipedia better, it's a *social contribution*, and I think that's honourable. And as far as what I heard, is that the students... put more pride into their work because they know it will be read by other people... and I think that's what the prof is counting on.

When asked if they had ever looked at or contributed to the discussion pages on Wikipedia, both librarians' responses were surprising. Max indicated that it was not relevant to his interest: "I'm more interested in the actual content," and therefore he had never paid attention to the discussion pages that lay behind Wikipedia articles. Freddy said that he had explained discussion pages to students in the class, and how they functioned on Wikipedia in the collaborative development of article content, but that he had never actually used them himself as a contributor.

These perspectives, combined with the accounts of organizational use above, suggest that the wiki as 'social' tool to facilitate 'dialogue' is really an after-thought for these academic librarians. Instead, wikis—even popular wikis as ubiquitous as Wikipedia—are about sharing knowledge in a primarily uni-directional way. In other words, they are viewed as tools for reference, rather than collaboration or socialization.

5.3.5. Findings

- Wikis are principally internal, but some implementations (e.g., WILU 2012 wiki) challenge the notion of external/internal, suggesting professional use related to the library organization, but not limited to it.
- Wikis are used primarily and significantly for internal information sharing, as a knowledge repository and/or reference tool (rather than for collaboration or socialization).
- Information sharing on wikis is perceived as uni-directional (i.e., one-way communication).
- Wikis are not being implemented to facilitate the co-construction of websites.
- Wikis are not being used for conversation/dialogue.
- Participants' attitudes suggest a belief that only designated users are allowed to edit wiki content.
- The concept of wikis is considered valuable as a "social contribution", and is even being taught to students.

5.4. Intranets

The two instances of intranet implementations that appeared in interviews have already been mentioned in the context of blogs: (a) The Grant MacEwan Library Intranet Portal (LIP), and (b) The University of Alberta Libraries Staffnet. Both are designed using the open-source Drupal content management system (CMS). This section will discuss both of these instances more broadly, and how they attempt to incorporate dynamic social elements.

5.4.1. Library Intranet Portal (LIP)

A great deal of data was collected on the use of LIP at Grant MacEwan Library during the initial pilot study (Alex, Beth, Carol, Deirdre and Elaine), since the LIP blog had been recognized prior to data collection as an integrated part of the library's knowledge sharing practices. This allowed me to include scripted questions that focused on the intranet's implementation and how participants'

used it (Appendix Two: Interview Guides). Much of the data collected on participants' use during document-level coding, presented as preliminary findings (Forcier, 2012a), were captured in tables for easy reference. These tables have been included in "Appendix Four: LIP Data Tables" to provide additional context. The project report for LIP has also been included in Appendix Five.

LIP serves an essential purpose for documenting and sharing information at the Grant MacEwan University Library. The LIP blog represents only a single, secondary component of that purpose by providing a medium wherein staff can post updates that affect short-term processes and changes at the Reference desk, as well as news of interest to the Reference department staff (i.e., the function of "notice board"). The other, primary function of LIP that facilitates knowledge sharing is as "repository for library documents" (Beth). These "documents" are not limited to policies or guidelines, but also include the desk schedule, meeting minutes, drafts and presentations using a file-sharing system that provides some limited search capabilities. According to participant Deirdre, this function of LIP "is a godsend"—a sentiment echoed with varying degrees of emphasis by all participants (Appendix Four, table A4.2). Prior to the implementation of LIP, all documentation was stored on a shared network drive. As Deirdre put it: "We used to have everything all over in a thousand folders— it was a mess." In this sense, LIP answered a need by providing a separate space where necessary reference documentation could be updated and stored.

Carol, a librarian who led the development and implementation of LIP, mentioned some of the social media elements they had tested on the intranet. She indicated that Drupal could support forums and more elaborate user profiles than were currently in place on LIP. The biggest limitation, for her, was the photo-sharing capabilities of the Drupal CMS. The library staff had many great photos from organizational events that could help provide a shared sense of culture and foster the sense of camaraderie and community encouraged by the Library 2.0 literature (Casey & Savastinuk, 2007, 79-80), but there was no easy way to make a 'Flickr-style' or 'Facebook-style' photo gallery in Drupal. Due to this limitation,

photo-sharing had never caught on as a practice on LIP. Deirdre identified another feature of LIP that she had occasionally seen used: polls. As part of the blog module installed on the CMS, the polling function allowed staff to post questions to users and get a quick response. Deirdre felt that this function proved very effective in obtaining information from staff quickly and efficiently, and in a way that reduced the back-and-forth of exchanges over email.

The question of collaboration and the potential social uses of LIP's file-sharing system were discussed with participants. In a manner similar to the blog, the file-sharing system played a facilitative role in collaboration by providing a space where presentations and final drafts for projects could be stored and referenced by staff; "actual collaboration" took place in meetings or through other Web 2.0 collaborative tools such as Google Docs or Dropbox (Alex). Carol indicated that the intranet's limited use for collaborative work was due to the technical limitations of the software. It was possible to make and track updates to work produced in the WYSIWYG editor native to the Drupal installation, but only one person was able to edit content in this way at a given time. This was a problem that Beth, Elaine and Jackie remarked on by providing the example of the desk schedule—a document frequently accessed and updated by staff, rendered as a table in LIP's WYSIWYG editor. This creates the potential for a bottleneck when staff are trying to update the desk schedule at the same time. A bigger obstacle to collaboration was the way in which most reference documents were uploaded to LIP as attachments:

...to edit them you have to download them, save them to your desktop, edit them on your own computer, save them and then upload them and overwrite the file that is currently there. So that's really, really clunky... And if you have more than one person doing that at any one time how do you know that the version that you have up there is the

most recent one and that you're not just overwriting somebody else's changes? (Carol)

The solution, according to Carol, would be to incorporate the functionality of a tool like Google Docs into LIP's file-sharing system. Unfortunately, limited time, knowledge and resources available to Carol and the staff responsible for the development of LIP had prevented this solution from being realized. Jackie offered a different perspective on the limitations of LIP, suggesting that the software was only part of the problem:

It's part of the culture. I mean, it's not all the tool.
It's a large part of the culture and the way people are using it.

Despite the high rate of adoption and use identified among participants, use of LIP as a social tool appears to be limited to the blog, and even that in circumscribed fashion as described in the section above. The connection between this phenomenon and the organizational culture will be explored in the next chapter.

5.4.2. Staffnet

Unlike the MacEwan interviews, the intranet of the University of Alberta Libraries was not perceived prior to interviews as a social media implementation. Rather, its relevance as such emerged from the interviews organically, usually in answers to suggested prompts in the interview guide or follow-up questions, rather than specifically scripted questions (Appendix Two: Interview Guides).

Opinion on the usefulness and functionality of Staffnet among the staff interviewed at the Rutherford and Cameron libraries was split. Helen described Staffnet as "drawers in a file cabinet". In this way, it fulfills the same function as Grant MacEwan's LIP, serving as a "repository for administrative policy documents" (Gloria). All of the participants indicated that they used Staffnet as a reference for important documentation, to access individual and team profiles, and

for important links to other resources, such as interactive forms. For most of the participants, this was the limit to the intranet's usefulness (Freddy, Helen, Ivonne, Lee and Max). For a few, it also represented the gateway to staff blogs and the 'Online Public Service Manual' wiki (Gloria, Karen and Nancy). Participants' perception of how such social media were integrated into the intranet seemed arbitrary; for instance, Freddy did not realize that the Staffnet actually supported blogs or that he had accessed the wiki while it was in development, but recognized that some of the updates that appeared on the Staffnet homepage were "like a blog". Nancy explained that the wiki and Staffnet were separate implementations; meanwhile Gloria indicated that the wiki had to be accessed via Staffnet. Based on accounts from the entire set of interviews and on personal experience with the different technologies, it is clear that the internal blogs described above are part of Staffnet, while the wiki is merely linked from there. None of the participants characterized Staffnet as "social", despite the integration of blogs. According to Gloria: "I usually only go to that intranet when I know what I am looking for and I'm specifically trying to find a document or a policy." In terms of the file-sharing system, Freddy added:

I don't think the weeding has been done very systematically, so it's a little bit difficult to use, and it's difficult to find things if you don't know where it is. It's better to ask somebody who does than to try to find it on your own.

In this sense, Staffnet seems less effective for organizational knowledge sharing than LIP. It is, however, important to remember that both implementations rely on the same software. The difference, then, may be cultural rather than technical.

5.4.3. How are intranets being used in academic libraries?

It is important to re-emphasize that intranets are not precisely a breed of social media; they represent a more generalized 'meta-medium' for knowledge

sharing that might include elements of blogs, wikis or social networks, and other dynamic features of Web 2.0. At the heart of both implementations observed in interviews is the need to effectively communicate important explicit knowledge in the form of administrative and policy documents. This purpose has no obvious need to be either dynamic or social. However, it is notable that both implementations include dynamic and social elements in the form of blog functionality, regardless of how much they are used. This suggests that the development of both foresaw the desire for social interaction through these platforms, going beyond the sharing of documentation. In the case of LIP, we can see this desire reflected in the goals listed in the project completion report (Appendix Five). The desire is also reflected in expressions of dissatisfaction with the limited functionality of both intranets. Max shared his idea for the ideal intranet:

My dream is—and I keep saying this everywhere I work for the last three or four years—is... a private Facebook site... for librarians to communicate on. [...]With email, you know, you have to go look at the thing, and open it, sort through the information... With a Facebook thing, [you could] stream at random the librarians communicating with each other.

Jackie had a similar perspective on how the intranet might be improved at the MacEwan library:

For instance, for announcements maybe that it could be more scrolling, Twitter-style, and maybe it could get archived in different categories. And with the discussion, [it would] just lend itself a little bit better in terms of the display and how much you could fit on a page, and stuff like that.

The concept of organizational culture and the way it relates to expectations of use needs to be further explored to understand the tension between implementation, actual use, and this desire for something more social to support internal knowledge sharing. This tension manifested by the organization's "social system" will be discussed in the context of Diffusion of Innovations in the next chapter, as well as in the context of librarians' attitudes toward intranets below.

5.4.4. Perceptions in personal use

The intranet takes on a peculiar role when considered in the context of social media. It aggregates dynamic and static functions of organizational knowledge sharing, mixing them together in a hodge-podge that is not easily separated. Freddy had this to say about his experience using Staffnet:

...the intranet links to other areas so when you click on certain things... there might be a type of wiki available, there is some kind of manual for database passwords or something like that, and then when you click on *that*, it looks sort of like a wiki and it doesn't look like the intranet anymore... So there are other elements... It's not as simple as saying, "this is what it is." There's different elements of the intranet.

Similarly, Beth struggled to define exactly what LIP *is*:

So it seems to be a lot of common documents go up there—reports, projects, the schedule is up there. And then, if something happens, like the printers go down, and everyone needs to know that, they'll post a message up there. So, it's on Drupal... It's not really a blog, it's not really a wiki, I don't know how to describe it. It's kind of a hybrid of those two, I would say.

This characterization of the intranet as a “hybrid” matches the implementations discussed above. The concept of “one-stop-shop” appears repeatedly in interviews (Alex and Helen); the literature on intranets tends to support this view of the intranet as a sort of dumping ground for need-to-know information (Battles, 2010). However, Battles (2010) also indicates that an intranet should serve this information “in an easily accessible and personalized way”; most of the participants do not perceive the specific implementations as fulfilling this particular need. The suggestions of Max and Jackie, discussed above, address this lack, indicating that the integration of more social media—and, specifically, social networks—might permit greater accessibility and personalization of information.

In order for such solutions to be seriously considered, an even greater obstacle than the technical limitations of existing implementations needs to be overcome. When asked if the intranet matched the values and goals of the library, Freddy characterized this obstacle with a common proverb: “The cobbler’s son has no shoes.” Meaning, librarians—and library administrations—have a tendency to emphasize the service they provide to their external users at the expense of the support they provide internally.

Librarians... They are great at searching and finding wonderful sources and organizing information but when it comes to themselves they seem to take the last place. ...They really don’t spend the time that they could... to create a good intranet. Maybe *because* they are spending too much time helping others.... (laugh) (Freddy)

The perception that internal processes for knowledge sharing take a second place to public service needs to be eliminated, in order for implementations such as LIP and Staffnet to be made more effective. The interviews suggest that what may be lacking is the perception that effective public service relies on effective internal knowledge sharing.

5.4.5. Findings

- Intranets are exclusively for internal organizational communication.
- Intranet implementations (i.e., using Drupal CMS) have the functionality to support multiple social media (as ‘meta-medium’), but this functionality is not used to its potential.
- Intranets are perceived as web-based ‘dumping grounds’ for static ‘need-to-know’ information.
- Participants’ perceived implementations as ‘clunky’ and ineffective for the purpose of organizational knowledge sharing.
- Some participants expressed a desire to incorporate more dynamic content, including elements of social networking sites (SNS) as a way to improve the intranet to improve dialogue.

5.5. Social Networks

Two primary implementations of social networks emerged from interviews: (a) The University of Alberta Libraries Twitter account, and (b) the Cameron library Facebook account. At the time of the Rutherford interviews, the Libraries had one Twitter account that represented the whole system, as well as accounts associated with the Bibliothèque Saint-Jean and the Winspear Business Library. In Winter 2012 both Cameron and Rutherford libraries, as well as additional branches of the University of Alberta Libraries system, launched their own Twitter accounts. The Cameron interviews provide a perspective on how social media were being considered and applied more systematically after this change; this is reflected in the Cameron Library Guidelines for Social Media Tools (Appendix Six). Both of these implementations were externally oriented toward library users, specifically students, and intended as tools to raise awareness of the libraries and of library services.

Interestingly, there were no examples of organizationally supported online social networks for internal knowledge sharing, despite the interest expressed by certain participants like Max and Jackie. Most of the participants across the set used Facebook, first for personal communication, and less often for professional

purposes. Twitter was also actively used by five participants, usually in a personal context, but sometimes for professional reasons as well. Nancy is not included as an active Twitter user, since she had only used it for following and participating in conversations at a conference. Gloria, one of the noted active users, told me that she had two Twitter accounts: a professional account that she shared with her colleagues, students and faculty, and a personal account that she only used with friends, family and for non-academic interests. Very occasionally, professional use occurred in an organizational context, such as when Lee noted that Max was always available on Facebook chat if he needed to communicate with him, or when Gloria retweeted tweets from the @UofALibraries Twitter account on her own professional Twitter account.

There was no evidence of any use of social networks for organizational knowledge management at Grant MacEwan Library. Despite this lack of evidence in interviews, the librarians demonstrate a professional engagement with such networks. Recently a librarian posted on the LIP blog about the Twitter account @MacEwanSleeps, which led to an unusually lively exchange of posted comments. One of these comments introduced another Twitter account that represents the culture of the institution, @GrantMacProbs. @MacEwanSleeps posts photos of students sleeping on campus, while @GrantMacProbs tweets about the problems Grant MacEwan students face. Both are produced by students. Considering the interest provoked by the blog post about these accounts, it is curious that the library has not made use of social networks to engage library users and staff.

5.5.1. Twitter: @UofALibraries

While the Libraries' various Twitter accounts are mentioned in passing by four of the participants from the Cameron and Rutherford interviews, the implementation of @UofALibraries was discussed at some length with Gloria. Gloria was responsible for producing content and interacting with other Twitter users on behalf of the Libraries. She provided a sense of the information she

posted through the Twitter account and where it originated from with the following explanation:

We are constantly seeing e-mails, for example, about the exhibitions that were going on in Rutherford South—exhibitions, special collections exhibits—but also... anything that sort of comes across into my inbox that's sort of a public announcement, I'll Tweet it. Also sort of functional instructional information because then there are, there are certain messages that are sort of predictable, not marketing messages but just related to using the library that sort of need to go out at a certain time every year. For example, “graduate students: if you are leaving Edmonton for the entire summer, you know, don't leave your books locked in a room where no one can get them if they are recalled”. Those sort of things, like absolutely day-to-day stuff that we try to educate people about I Tweet about as well. And then I also will Tweet occasionally about outages or you know, when things are not going right in the library.

Based on this explanation, use of Twitter as an element of public service is deeply tied to internal information sharing that occurs through email. The process described by Gloria suggests that news and events affecting the Libraries arrived in her email inbox first, and that she then determined if it was appropriate to share with external library users. If it was, she would then tweet it. She referred to these types of messages as “marketing messages” (Figures 5.1 and 5.3). A second type of messaging was described in the form of “functional instructional information”; these messages share knowledge about library use to the community of library users (Figure 5.4). Based on the examples found in the Libraries' Twitter feed

from the Fall of 2011 (Figures 5.1-4), both of these types of communication might include or refer to basic information literacy instruction— an essential part of academic library work. Finally a third type of messaging emerged from Gloria’s description as purely operational notifications, such as service outages or changes in library hours (Figure 5.2).



Figure 5.1: *Marketing message.*



Figure 5.2: *Operational notification.*



Figure 5.3: *Marketing message referring to basic information literacy instruction.*



Figure 5.4: *Functional instructional information message.*

Interactions with library users can take place on Twitter. Sometimes users respond to the Libraries' tweets, either to ask for more information or to comment on the message. At other times, Gloria indicated, she will read something on Twitter that is of interest to the community and will reply to it or retweet it. Both of these can occasion social exchanges, where an admittedly limited two-way conversation takes place. Gloria provided a specific example where the exchange had nothing to do with services, but merely represented an engagement with the culture surrounding the library and its users:

A couple of days ago someone tweeted a picture of two young students making out in the Rutherford Reading room on the 2nd floor, they were like "Hey @UofALibraries..." ... That's not exactly a reference question, that's just me tweeting back, like, "Oh well... The library has that effect on some people!"

The original tweet and the interaction that followed is reproduced in Figures 5.5 and 5.6. The evidence from this interview suggests that Twitter served two important functions for library communication: 1) To share information with its users, for the purposes of promotion of services and instruction on how to use those services; 2) To actively engage and participate in the community of its

users. The external blog discussed in section 5.2.3 was theoretically capable of both these functions, but succeeded at neither. The implementation of Twitter, on the other hand, succeeded at both, and appeared to be especially successful in fulfilling the function of community engagement.



Figure 5.5: *Original tweet described by Gloria.*

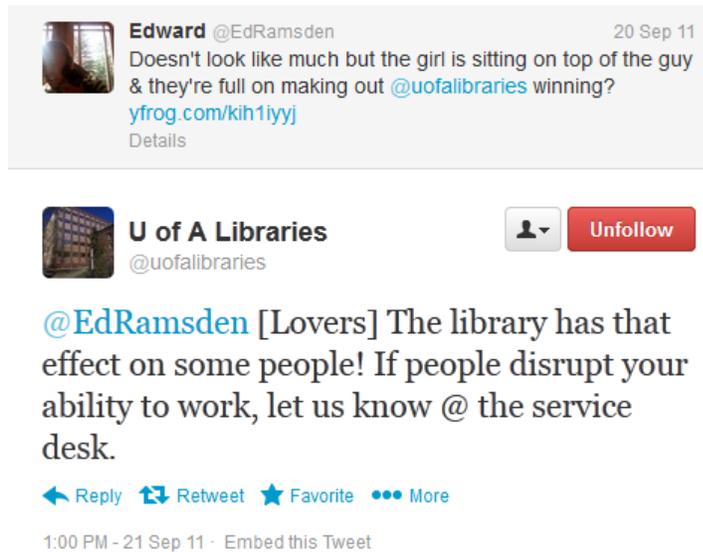


Figure 5.6: *Gloria's interaction with Twitter user.*

5.5.2. Facebook: Cameron Library

Nancy prefaced her account of the Cameron Library Facebook page as a component of the library's social media policy by describing an article she had read. The article reported on a 2007 campaign by the Gelman Library at George Washington University called "The Librarian is Your Friend" (Bietila, Bloechl & Edwards, 2009). As part of the campaign, instruction librarians created Facebook profiles and connected with students from library instruction sessions. The librarians then used Facebook "to share research tips, display library applications, and emphasize their availability to their student 'friends.'" (Bietila et al., 2009, 135) The article indicated that, despite these earnest attempts by the library to engage students, most of the librarians' Facebook "friends" were other library staff; in fact, there was hardly any indication at all that students were responding to the campaign.

I read an article where... they came up with a campaign, “The Librarian is Your Friend.” [...] And they interviewed the students later, and they said, “That’s creepy!”

[...] It’s sort of akin to you showing up at a dorm party... “Oh! There’s a...librarian... here... drinking beers with us, what’s going on?!” (Nancy)

According to Bietila et al. (2009), “interviewees typically described the prospect of student-librarian Facebook interactions as ‘weird’ or ‘awkward’.” (138-139) Since the “The Librarian is Your Friend” campaign, Facebook now provides the option for organizations, enterprises, and commercial artists to create *pages*, distinct from user profiles, which Facebook users can “like”—as opposed to “friend”. According to Nancy, this reduces the “creepy” factor; she reported that the Cameron Facebook page had over 500 ‘likes’ (that number is now above 600), which she considered a mild success. Nancy was careful to temper her enthusiasm.

...If you think about the population of the university, that’s not so many. (laugh) [...] Basically we sort of joke around and say, “Students don’t expect to text or be using Facebook with old people,” because basically everyone who works in a library is old to them. ...But also we know that they don’t tend to use email. ...I just sort of wonder, as time goes on, how is that [going to] change? ...One day, the student’s going to walk through the door [that doesn’t] use email at all.

This concern seems to drive a systematic approach to covering all possible communication media used by students. Cameron’s adoption of a Twitter feed, only briefly mentioned in the interview, represents another platform where the

library can develop a presence to engage students. Other social media have also been considered, though only Twitter and Facebook are currently included in Cameron's social media guidelines (Appendix Six).

Yeah, I think someone threw out [at a meeting],
“Maybe we should have a Pinterest account?” I kind
of... not really laughed, but... You can't just dive
into everything, just because it's trendy right now.
(Karen)

According to Nancy, Cameron library staff used the Facebook page to speak to students primarily by posting announcements: announcements for events and changes happening within Cameron library's physical space, displays or exhibits, and changes in hours. Sometimes announcements are relevant to the academic schedule: “Good luck on your exams!” or “We're open 24/7 for exams.” Occasionally, Facebook is used to promote new library resources: “...for example, we're going to have a new discovery tool... where you can search in the library catalogue and databases and some of our digital library creations... at the same time, and it's supposed to be a better interface and that kind of thing.” Sometimes the Facebook page also features posts of interest to the faculties it supports:

For example, when the transit of Venus was
happening, we were putting posts up, “It's
happening on this day, go to the Observatory,” “Oh
no, it's cloudy,” You know, those kinds of things.
(Nancy) (Figure 5.7)

Finally, Nancy also suggested that they used it to ask users' opinions. This last instance, however, seems to be more of a potential use of the implementation than an observed use. A scan of posts on the Cameron Facebook page from January 1, 2012 to December 24, 2012 (~130-150 posts) reveals that only seven posts contain comments. In these seven cases, there are never more than two

comments, and the second comment was always the library itself replying to the first user. In each of these instances, when the user commenting is a student, they are responding to posts that take the form of an “announcement” (as described above and in Figures 5.7 and 5.8), rather than an explicit request for feedback. Karen, whose task it was to produce content for the Facebook page, indicated that she had asked about creating informal polls asking, for instance, “where do you like to study?” or other appropriate questions simply to encourage comments from students, but understood from managers that as a policy the library preferred only posting questions when it needed answers (e.g., a survey of students’ preferred extended hours during exams, which would be taken under consideration when making that decision). It is worth noting that this condition is not explicitly stated in the social media policy (Appendix Six, “Cameron Social Media Guidelines”), but that the policy does list “consult with users – ask users opinions...” as one of its strategies. During the interview, Nancy had brought a copy of the policy to provide me for my research, which she consulted when asked about Cameron’s organizational use of social media.

The low number of comments suggests that there may still be an “awkward” element associated with student-librarian interactions on the Facebook page. Despite the lack of dialogue, many posts demonstrate their relevance to users through the number of ‘likes’ and ‘shares’ that they garnered. More than half the posts have between one and four ‘likes’, with a few accumulating as many as ten (Figure 5.9), and at least 20 posts had been ‘shared’ by one or more users (i.e., re-posted on the user’s profile page so that their own network of friends could view it).



Figure 5.7:
Cameron Library posts an announcement on behalf of the U of A Observatory.

Figure 5.8:
Student provides feedback on announcement of changes to Cameron Library study space.





Cameron Library - University of Alberta Libraries

December 12, 2012

This is Mason - she's hanging out in Education South for University of Alberta Puppy Therapy



Like · Comment · Share

10 1

10 people like this.

oh, those friendly golden labs ...looks like anyway

December 12, 2012 at 11:38am · Like

Figure 5.9:
Cameron Library's most-liked Facebook post.

5.5.3. *How are social networks being used in academic libraries?*

The @UofALibraries Twitter account and the Cameron Library Facebook page both take advantage of SNS using the same strategies recommended by Farkas (2007, 118-124) and Del Bosque et al. (2012), in order to develop a “presence” and “forge a connection” with library users. They do so with middling success, as seen in the examples of Figures 5.5-9. None of the other social networks mentioned in Chapter Two (“Literature Review”) figured significantly in interviews (i.e., Flickr, Instagram, Del.icio.us), although some participants identified these and others when describing their use of social media in their personal lives. It is noteworthy that, as discussed above, there was nothing in interviews to suggest organizationally approved or sanctioned social networks among the libraries’ staff. Nevertheless, informal uses of social networks were plainly in evidence in the accounts of all participants for personal and/or professional purposes. I explore the many possible reasons for this in the next section while reporting on participants’ perceptions in personal use.

The external orientation of both implementations is significant, particularly when compared with the previous report on intranets; it demonstrates once more the aphorism shared by Freddy, “the cobbler’s son has no shoes.” In this case, and most especially in the notable absence of any implementation of any kind at the Grant MacEwan University Library, the saying should more aptly be: “the librarian has no social network.”

5.5.4. *Perceptions in personal use*

One reason for this absence, perhaps, is that the social network remains a “concept-in-flux”, as mentioned in Chapter Two. While the literature on social networking sites (SNS) is rapidly expanding, it is still unclear how social networks *can* be used organizationally, and therefore lacks any firm conventions around how they *should* be used. The “creepy” factor noted by Nancy can be attributed to the nebulous state of the medium; social networks, more than any other type of social media, represent a medium in which the concepts of external and internal, and public and private are fluid, and thus easily blurred. The “The

Librarian is Your Friend” campaign emphasized this by highlighting how uncomfortable it was for students to suddenly find librarians—a group they associate with their public or professional spheres—infiltrating a space they had imagined reserved for their private and personal interactions. Similarly, a number of my study participants were uncomfortable with the idea of combining their personal use of social media with their professional use, and made a point of expressing that they maintained a separation of the two (Beth, Deirdre, Gloria, Jackie, Karen, Lee and Max). Jackie expressed “trepidation” in using blogs and other social media for professional purposes, which connects once more to an observable tension between what ought to be considered public and private on the web. Many of the participants shared an understanding that nothing published on the web is *truly* private, which may explain their cautious approach to using social networks.

One of the questions posed in the interview guide and addressed to all participants was: “How important are these technologies (i.e., social media) in the way you create, access, and communicate information on a daily basis?” The answers were surprisingly varied, particularly in the ways participants’ included examples in their use of social networks. Perhaps most surprising was that there was no clear generational divide within the sample. The two oldest participants, together representing nearly 58 years’ worth of library experience, both noted that social media were essential—especially in their personal lives:

Extremely important! The latest non-work example I can give you is that I’m a musician and I have 2 house concerts coming up... next weekend, and we’ve been getting the word out via Facebook. It’s ubiquitous and... it’s been beneficial because people in another area who know me can get the information they need as opposed to me sending out a group email. [...] The music community that I’m in in the city has a presence on Facebook, which is

nice, and there is a site you can go to if you want to see what is happening, what are people posting, who's playing where, who needs a musician, you know, whatever. (Lee)

Professionally, somewhat useful... But from a social point of view, really important! [...]

I don't know if I could live without them...

Probably—because I did! (laugh) I'm pretty sure I lived without them in the past, but... It's hard to think about it, though, right? It's hard to imagine.

(Ivonne)

Ivonne provided several examples of how social networks proved useful in her personal and professional life. She explained that, while she was not an avid Twitter user by any means, she still used it “incidentally” to follow races; her son was a runner and cyclist, and so she would use Twitter to follow his progress, and to see “whether or not he's died yet”. This “incidental” use seemed to help alleviate her maternal worrying instinct. Ivonne also described another “incidental” use of Facebook in the professional context; she explained that over the years she had helped train a number of interns and new librarians, who had worked at the library for a few years and then moved on. “Keeping in touch with them,” she said, “is really interesting and fun. ... Sometimes it is work-related, sometimes it's just maintaining professional connections, but that's something that wouldn't have been possible without something like Facebook.” In her case, these “incidental” uses accumulated to make social media something she could no longer imagine living without.

The pseudo-organizational use of SNS represented in Ivonne's example of Facebook use corresponds to Beth's use of social networks. Beth, as a younger librarian and avid user of many social media, was one of the participants who maintained a firm distinction between ‘work’ and ‘non-work’ contexts. Facebook

and Twitter interactions, she maintained, were rarely work-related; however, she described her professional use of them thusly:

I am only friends on Facebook with a colleague— just one of them, which I am friends with outside of work. I am currently not friends with any of my colleagues on Facebook, unless we are friends outside of work. ...Although, saying that, I'm friends with... ex-colleagues, or people who I've worked with in the past. I'm friends with them. But I think I tend to become friends with them once you leave. Just to keep in contact.

[...] I have certain communities, I guess, that I follow [on Twitter]... I follow a lot of librarians, so you get a lot of, I guess, "librarian" news... I have other communities that follow, less for news, more for—I don't know—I suppose 'friendship'... or just common bonding over particular topic.

The tension between professional and personal is evident in Beth's examples. Despite maintaining a strict policy for 'friending' on Facebook, there is some fluid mixing between her professional and her personal lives; colleagues that move on, just like in Ivonne's example, are *safe* to friend on Facebook, as a way of staying in contact. The question of overlap between organizational, professional and personal communities is one also raised in the account of Jackie. Jackie explained that her use of Facebook was primarily for professional reasons; she said she had approximately 300 friends, and maybe only 75 of those were personal friends and family. The rest were professional connections: colleagues, co-workers, mentors that were part of her identity as a librarian. In this way, her approach to Facebook and to compartmentalizing the professional from the personal was altogether different than Beth's. She used Facebook as a professional communication tool, to stay updated and pass on information related

to groups and organizations in her field or related to her career (e.g., the alumni association). She described her use of Facebook for personal communication as ‘minimal’, limited to scheduling events or short informal messages. But when asked if the two contexts ever blurred for her, she responded:

I think it can. ...Generally, if I’m posting about general librarian things, then that’s just as a librarian. [...]I think that, if I was to, I would want [to] say that I’m posting this as a librarian, not as a reference librarian at Grant MacEwan. And I think that, internally [on LIP], when we talk about things... people make that distinction as well. Like, this is what we’ve decided as a group of librarians *at MacEwan*, as opposed to this is my opinion as a personal librarian...

Jackie went on to provide the following scenario, not strictly limited to social media: in the coming months, she was going to be presenting at a professional conference on her library volunteer work. She expected to tell people at the conference that she worked at the Grant MacEwan Library in order to supply context but noted that she would be speaking primarily as a professional librarian, not as a representative of the University. It was clearly important for her to distinguish her professional identity from her organizational identity, but she understood that they merged together with her personal identity in many ways—including in her use of Facebook. Although Jackie did not explicitly acknowledge it, the struggle seems to occur where these different communities overlap; when co-workers become friends, or when they share the broader identity of a library professional. Social networks, then—and, more broadly, social media—are deeply tied to both the identity formation of academic librarians and the organizational, professional and personal communities they participate in.

For Beth, SNS represent community, especially in the case of Twitter:

I use Twitter A LOT. I kind of love Twitter. I was having a conversation with people this morning on Twitter about a picture I took and posted. ...I find there's a lot of different communities on there, and I'm involved in a number of them.

Facebook also represents 'community', but in a way that is perhaps less easily controlled than Twitter:

I use Facebook, although I hate Facebook. [...]
Mostly just to keep up with people that I don't often see, I suppose. I mean, you want to know when your high school friend is pregnant, right? Facebook is kind of a waste of time.

Implicit in Beth's response is a desire to 'turn off' unwelcome news. Twitter has a better affordance for this function, permitting users to manage their feeds through lists and to search indexed tweets with hashtags or keywords. This function is possible but less effective on Facebook with the ability of 'blocking' friends' posts, and one's Facebook 'friends' have a tendency to agglomerate into a single group; a user's Facebook news feed becomes, essentially, one large, noisy room where certain voices become difficult to ignore. The use of lists and tagging on Twitter make it much easier to compartmentalize conversations or communities into separate 'rooms'. Carol and Deirdre expressed a similar ambivalence about Facebook, indicating that while it was useful in their personal lives to keep up with family and friends, they did not produce very much content there. Deirdre explained this by indicating she was, "by nature", someone who "lurks", meaning that she consumed information on social media, but rarely contributed or announced her presence. Carol indicated that Facebook and other social media were especially important to her for gathering information:

I'm realizing more and more that I'm relying on these kinds of media to keep me in touch with

what's happening in the world, which is kind of a scary thought to me. ...Less and less, I'm relying on traditional media like newspapers, even news [web]sites, and I'm just going to the places that my friends [share news], who all have the same shared outlook on life as [I do]. So we're all doing all of this reinforcement about our common set of morals and values, and sometimes I'm concerned that I'm just turning into a... really one-dimensional person. I'm missing out on all of the other stuff that might challenge my points of view...

Carol's fear arises from the realization that social networks can create an "echo chamber". While she noted that social media were essential in the way she shared and accessed knowledge on a daily basis, Carol critically examined that need in a way only a few of the participants managed in interviews (Gloria, Jackie and Max). According to her, this reliance on social networks, which is becoming increasingly expected as a practice for gathering information, can be dangerous because it can limit the amount of information you process. To borrow a concept from information retrieval (IR), the "echo chamber" of social networks provides high specificity in the knowledge of your immediate network, while diminishing recall so that other relevant views outside that network go unobserved. Max described his attempts at avoiding the "echo chamber" produced by the web as an information source, providing the example of his interest in politics. As a liberal, he made a point of following conservative news sources on the web; recently, he had finally given up following a particular partisan source because of how they distorted the news, but his comments in the interview revealed an underlying apprehension:

It's very easy to slip into reading what you just want to see. I follow [liberal news website], but I get angry at them a lot because it's so obvious that

they're doing the exact same distortion... That's actually one of the reasons I don't comment [online] very much anymore... I wasn't fooling myself that I was being broad-minded. [...] I mean, why contribute to that echo chamber?

This concept of the “echo chamber”, and the concern it generates, is fundamental to how individuals perceive themselves and their use of social media. Librarians like Helen, who indicated she already had a social “network” that provided her accurate and timely information and that existed beyond SNS or Web 2.0, seem confident that their sources do not produce a similar echo. Are they correct in that faith?

This lengthy discussion leads back to the questions raised by the specific implementations of social networks discussed above, and, moreover, the lack of implementations for organizational knowledge sharing. Helen and Max, as library administrators, represent the ‘decision-makers’ behind academic libraries. Their anxieties about social media in general, play a role in how SNS and social media are implemented in the library. It is perhaps for this reason that social networks have not been implemented internally to facilitate knowledge sharing. The blurring that social networks create between identities and communities may also represent another, even more plausible reason; given the anxieties expressed not just by librarians in greater positions of authority, but by participants across the sample, it is likely that there exists a shared “trepidation” toward the implementation of social networks in an internal context. Paradoxically, it is the two participants who best expressed these anxieties, Jackie and Max, who also expressed a desire to see elements of social networks implemented in intranets. A third reason that might contribute to the limited use of social networks for organizational knowledge sharing is that many of the functions they might support are already facilitated by other technologies that are firmly entrenched in organizational knowledge practices. The following sections will discuss some of

these technologies, and how participants compared them to social media in interviews.

5.5.5. Findings

- Social networking sites (SNS) are being implemented only for external communication.
- External communication using SNS is mostly limited to uni-directional messages (i.e., announcements).
- Specific content group websites, meaning social tagging and photo-sharing SNS (e.g., Delicious, Flickr), were not used in the organizational context; many participants, however, use these in their personal and professional activities.
- Almost all participants actively use SNS in their personal and professional lives; many of them rely on SNS as an essential part of how they access and share knowledge on a daily basis.
- Some participants are anxious about how much they rely on social networks, and/or how they might produce an “echo chamber”
- Some participants wish that SNS were implemented for internal organizational communication.
- ‘Decision-makers’ expressed anxiety about implementing social networks for internal knowledge sharing.

5.6. Email

Before continuing, it is worth pointing out that this section and following sections discuss the practices around technologies that are not defined as ‘social media’ *per se*. As discussed in Chapter Two (“Literature Review”), Kaplan and Haenlein (2010) broadly define ‘social media’ as a “group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content” (61). While intranets, covered above, can potentially fall under this categorization as a sort of ‘meta-medium’, it is far more difficult to apply that description to email or

instant messaging. Cloud computing applications, while they support collaborative work on the web and are based on the same ideological principles of Web 2.0, are not designed to generate content through user interactions in the manner of blogs or social networks. Still, an argument can be made that there is a fine and easily-blurred line between what I have described above as ‘social media’ and what I will explore now as other technologies that support organizational knowledge sharing practices.

One of the major findings from the preliminary phase of analysis was the prevalence of email (Forcier, 2012a). It was impossible to discuss modes of communication and organizational knowledge sharing without hearing about email. Even more than informal face-to-face interactions, email was revealed to be an essential medium for sharing knowledge in the workplace. Many of the participants identified it as a preferred method of communication over any of the social media discussed above. When I asked how frequently they used email compared to other methods, all participants indicated that a majority of their workplace interactions took place through email (i.e., This question is scripted in both interview guides and consistently phrased in interviews as follows, always the context of organizational work: “how many of your interactions would you say take place online—so via email, chat or any other online tool—compared to face-to-face or phone?”):

[Email] is the primary way. I mean, my inbox is full all the time. (Alex)

If I had to pick a percentage, like 20% would happen through something like LIP. Sometimes we use Google docs to share stuff, back and forth. But most of it is sort of more traditional email. (Carol)

Well, that’s interesting because I spend half my day going through email. Answering email. So quite a lot. Like, I spend a LOT of time answering email.

[...] For me, email is primarily as an archive, as a written record. (Deirdre)

Email more than anything, and then second to that I would say face-to-face. So often times the email leads to face-to-face meeting, you know—it is almost like there are different types of interactions that are best suited to different types of communication—so it's very common for me to get a question by email and I can recognize whether it would take 3 hours for me to write an email in response to this question or I could just call someone on the phone or ask them to drop by the library... But mostly, I mean, email. Email [is] just always... first point of contact. (Gloria)

From my point of view, I think 80% email, 20% face-to-face? [...] no, it would be less than 80%, because you'd have to count the time where you sit around a coffee, and you say, "oh, please, somebody, help me with this one!" (Ivonne)

Maybe 60% email, 40% face-to-face. Yeah, because if I'm unsure about something, if I can get somebody face-to-face, I'll get them face-to-face. So there's no misunderstandings! (laugh)... Certainly, it depends on the time of year. Right now, everyone is kind of around. In the Fall... We'll all be ships passing in the night. So, I think, probably then it'll be like 80/20. (Jackie)

I'd say 80/20. 80% email, and then 20% face-to-face. Just for myself, because I'll usually start the

email thread, because I like to have things written down for reference later. (Karen)

The highest percentage would be email. So, I don't know, maybe, what? 60% email. And then... Often it's a combination of the two, so you start by email, and then say, "Come and see me when you're in the office." And... follow up that way. So, a combination of the two, I think, works best. But it's a high percentage by email. (Nancy)

Some of these participants went so far as to say that email was their preferred mode of communication (Alex, Beth, Carol, Freddy and Karen). Others were more judicious, indicating that email was preferable in some instances, while face-to-face, telephone or instant messaging were useful in others (Deirdre, Elaine, Gloria, Helen, Ivonne, Jackie, Lee and Nancy). Even participants who expressed an active dislike for email confessed to relying on it for a majority of their organizational and professional communication. Some participants implied that it was, at best, an inadequate medium for dialogue (Helen and Max). Those participants serving in a management role, such as Deirdre, Helen, Max and Nancy, were particularly sensitive to the organization's over-reliance on email:

We rely too much on email, and everyone gets overloaded with email. (Nancy)

If it's a simple, factual piece of information that I need to give to someone, then it's easier for me to send it in an email, right. If there's any sensitivity or possibility that someone might misunderstand my answer or the information that I have to give, I like to give it face-to-face. So it actually depends on what I'm trying to communicate. If I really, really definitely want to be absolutely clear, then it's face-

to-face. And especially if there's anything sensitive that someone might want to ask a question right away and have an answer, and feel like I listened to their input, right. I always do that face-to-face.
(Helen)

Information overload. I get 50 to 100 emails in a day, and how can you possibly pay attention to...? [...] Like, at my last job we had some guy who'd leave this passive-aggressive line at the bottom of his email, saying "Sharing is Caring". And—he was actually passive-aggressive. ...It was manually typed out every time, I later found out, he actually didn't have a macro to do it. (Max)

Max's example, albeit humorous, captures the nature of email as a technology embedded in organizational practice. While participants were hard-pressed to think of examples of when they had used SNS, for example, in the context of their work at the library, none had any trouble speaking at length about how they used email—except, perhaps, when pinpointing just how much they used it in their daily interactions by assigning it an arbitrarily large percentage of their total communication. Helen's observation suggests that email, while useful for sharing explicit knowledge in the form of straightforward "factual" messages, is not effective for more complex communication, particularly of sensitive information. Other participants echo this in their own stories about using email for asynchronous communication (Deirdre, Ivonne, Jackie and Nancy); face-to-face, as described in the next section, is more effective for the synchronous sharing of complex and, especially, tacit knowledge. The limited use of social media for organizational knowledge sharing is certainly influenced by the ubiquitous application of email, and the perception of it as an essential and basic medium for communication in organizations. It is challenging for a new technology to become adopted when there is no perceived need for it.

It is particularly fascinating to consider the prevalence of email in organizational practices from a historical perspective. Nunamaker, Romano and Briggs (2001) compare survey results from 1984 and 1999 on the use of various forms of organizational communication used by knowledge workers, ranging from emails to faxes to post-it notes. In 1999, according to the Pitney Bowes Survey of 800 knowledge workers cited by Nunamaker et al. (2001), the telephone was the prevalent mode of communication, accounting for 25% of all communication, compared to a 17% share for email. These survey results are hardly generalizable to the context of academic libraries. However, they are provocative; email as a technology is still relatively young, only gaining traction as a popular form of communication with the rise of the Internet. Social media are quite a bit younger, if we consider them an outgrowth of Web 2.0. Assuming such technologies follow a similar trajectory as email, organizational knowledge sharing might look very different in ten years' time. As Nancy put it, when talking about the evolving expectations of students at the service desk: "I just sort of wonder as time goes on, how is that [going to] change?"

5.7. Face-to-Face

'Face-to-face' as a basic medium for communication also plays a fundamental role in the organizational communication of the sample libraries. The KM literature often emphasizes face-to-face or in-person interactions as a powerful way to share tacit knowledge, particularly through informal exchanges or "storytelling" between peers (Brown & Duguid, 1991; Nonaka, 1994; Thomas, Kellogg & Erickson, 2001). Dialogue, at its most basic level, is still best achieved when all parties are physically present together, and unrestricted by what Brown and Duguid (1991) call "canonical practice"—the organization's espoused (i.e., documented) practices as opposed to workers' actual practices (41). Face-to-face dialogue can be *ad hoc*, taking the form of, for example, a quick exchange between librarians informing about relevant news, issues and solutions during a shift change at the service desk, or when the liaison librarians meet weekly over coffee to chat about their latest challenges. It can also play an essential role for management and collaboration in the more structured form of meetings. The

benefit of ‘face-to-face’ as a medium is that it is only mediated by the individuals themselves, and their own social construction; there are fewer layers of mediation than any computer-assisted forms of knowledge sharing, including email, instant messaging and social media. For this reason, it is understandable that many participants, such as Helen and Jackie as we have previously seen, rely on face-to-face interaction to avoid misinterpretation.

A discussion about social media in organizational knowledge sharing can no more avoid face-to-face interaction than email as an essential communication practice. The catalogue of comments from participants reviewed in the previous section on email effectively proves the importance of ‘face-to-face’ as a medium for organizational communication among participants. The problem with face-to-face interaction is that it requires the physical presence of members; in the modern workplace, time and presence are at a premium, and such a requirement is simply not realistic—even in the smaller organizational groupings exemplified in the academic libraries my study has sampled. Moreover, knowledge is not generated solely through interpersonal face-to-face interaction; it is learned by individuals and groups engaging in a variety of activities, not least of which is the creation, distribution and consumption of explicit knowledge in the form of documentation. The field of knowledge management is built upon the principle that interactions are not limited to the “same time, same place” context of ‘face-to-face’ (Mittleman & Briggs, 1998), that knowledge, in fact, is and must be generated and disseminated via a multiplicity of communicative media. It is the purpose of KM to systematically arrange and “leverage” these media and the knowledge they contain for the benefit of the organization (Baskerville & Dulipovici, 2006). Or, as Lee succinctly framed the broad scope of KM, after listing all of the methods he used for communication: “Short of the Vulcan Mind Meld, I don’t know what else we can [do] [without] telepathic abilities...”

That being said, ‘face-to-face’ emerged in interviews as a key component of knowledge sharing practices in the studied libraries; not only was it preferred as a mode of communication by a number of participants (Deirdre, Helen, Ivonne,

Jackie, Max and Nancy), but it seemed to better serve the knowledge sharing needs of certain work groups. Deirdre—whom I previously discussed in the context of the LIP blog, where she stated that the blog simply did not meet her and her branch’s “need” (section 5.2.1)—explained that the staffing of her small branch was best facilitated by ‘face-to-face’. Most of her office interactions were limited to two other library staff members, who had their own offices in very close proximity to her own. All three offices shared a view of the library floor and desks. Deirdre said that, if she needed to chat with someone about a work-related issue, she would just get up and go see them: “...I think at [main campus] it’s a much bigger environment, right, and if you need to talk with someone... you’ve got to walk... You know, it’s far.” Even participants from the main campus library, however, noted that sometimes it was just easier to get up and go talk to someone, if they were on campus (Beth and Jackie). On the other hand, participants from University of Alberta Libraries noted that it was sometimes easier to talk to co-workers via email, since it was hard to predict when they would be at their desks, or if they were occupied (Freddy, Ivonne and Nancy). At Cameron, face-to-face interaction again seemed to be preferred, particularly in the context of collaboration and learning around service desk practices (Karen and Nancy); some participants here indicated, however, that there *could* be more convenient methods for communication, such as instant messaging or social networks (Lee and Max). In order for these other methods to actually be useful, both of Max and Lee agreed, there would have to be a higher rate of adoption among staff. From a professional standpoint, face-to-face interaction also played a role in maintaining contacts and participating in communities. Helen described how she maintained her network of professional connections as follows: “My community is: I meet people at conferences [and] I talk with them via email or phone, or face-to-face.”

Telephone as a medium is worth briefly mentioning here. Telephone interactions share the same affordance of ‘face-to-face’ as a synchronous form of communication, while addressing the problem it poses in terms of physical presence. One interesting finding from the study was the limited use of the

telephone by participants, sometimes rating less useful than the LIP blog or instant messaging, despite addressing the shortcomings of face-to-face interaction. At Grant MacEwan, this played out along generational lines, where the younger participants expressed ambivalence (Alex, Carol and Jackie) or even a dislike (Beth) of telephone interactions, which affected how much they used it. Older participants Deirdre and Elaine indicated that they frequently used the telephone. Deirdre and Carol, as librarians at the satellite campus branches, explained that the telephone often proved an effective means of communicating with staff at the main campus or at other branches. Aversion to the use of the telephone as a medium for communication was less explicit in the rest of the sample, but still rated low relative to other methods for interaction. Lee indicated that he preferred instant messaging, and wished that more of his co-workers took advantage of the function for Google Chat that was part of their organizational email accounts. If he knew that colleagues were using it, Lee said, he was more likely to send an instant message rather than call them or write an email.

5.8. Instant Messaging / Chat

Instant messaging, IM or 'chat' is similar to telephone, in that it is a "same time, different place" interaction (Mittleman & Briggs, 1998). IM was implemented in two significant contexts within the sampled libraries: first for public service, allowing students to ask library reference questions via instant message through a chat window on the library website; and secondly as a method for internal communication between librarians and staff. Both library systems provided a reference chat service for students, and all participants had interacted with library users through this medium in their work at the library. The Grant MacEwan participants also had an internal chat system supported by the University's IT department; the University of Alberta librarians did not, but the adoption of Gmail as a host for institutional email accounts made it possible for staff to instant message using the Google Chat function. Two participants at Cameron Library also indicated that they chatted with each other using Facebook chat (Max and Lee). A surprising number of participants shared a willingness to use instant messaging as a method for communication (Beth, Carol, Jackie, Lee

and Max), but a perceived lack of use among their colleagues kept them from relying on it as a mode of communication. For example, Beth explained:

I don't use [chat] very often because a lot of my colleagues don't use it. If they all used chat, it would maybe be different, I would maybe have a different answer, but I like chat because it's instantaneous.

Somewhat surprising in the context of the Grant MacEwan Library was that Carol and Deirdre did not list instant messaging as an option for communicating with staff at other campuses until I explicitly asked them. Deirdre responded by saying, "Rarely. That is something... I just forget that it exists, to be honest with you." This suggests less than satisfactory adoption, considering the function instant messaging as a medium is meant to support (i.e., "different place" interaction). It is possible that, within the Grant MacEwan environment at least, this lack of adoption is generational; Elaine, an older staff member, also only considered instant messaging as an afterthought for internal communication, though she did list it as a primary form of external communication in her work at the reference desk. Such an observation is inconclusive, however, given the small sample size. Moreover, both proponents of internal chat in the virtually chat-free environment of the University of Alberta were older librarians (Lee and Max).

The presence of instant messaging also challenges the potential applications of social media. SNS, such as Twitter and Facebook, can serve a similar function to chat, while also offering different ways of structuring a user's contacts or social network, and tracking interactions or relationships. It remains to be seen which medium is better suited to the organizational context; based on interviews, SNS and instant messaging are both underused, although instant messaging has the benefit of already having been implemented in the studied libraries for organizational communication.

5.9. Cloud Computing and Collaborative Software

Discussion of social media in the context of collaboration often veered off into a discussion of other Web 2.0 tools (e.g., Google Docs, Dropbox, Delicious). These tools are not usually characterized as ‘social’, but are more often described as ‘productivity’ or ‘project management’ tools. It is important to understand how these contribute to organizational knowledge sharing, and how they are distinguished from social media.

Google Docs, an online collaborative space for hosting and sharing documents that is typically associated with a Gmail account, came up as an important example of organizational knowledge sharing in almost every interview (i.e., Alex, Carol, Deirdre, Freddy, Ivonne, Jackie, Karen, Lee, Max and Nancy). In these instances, it was often compared to other limited methods for online collaboration afforded by the intranet implementations discussed above:

[LIP is] fairly primitive. I mean, it’s simple. It’s just got the blog and then you’re uploading files. I mean, it could incorporate, you know, I’m thinking... like Google Docs where you can collaborate on documents. You know, we do a lot of that, right. (Alex)

I sometimes use Google Docs, especially with some of the other newish librarians, so, if we’re co-editing stuff... [...]We need, like, a Google docs thing in LIP. (Carol)

“OK, how many people have we got on this project? Where are they? What works? ...Can we just use Google Docs then?” ...Rather than using our own in-house [Staffnet]; supposedly you can share these documents [on Staffnet], but... (Ivonne)

Dropbox, cloud computing software that backs up a user's files and permits the easy sharing of documents and folders with others, fulfills a similar purpose as Google Docs and was also occasionally mentioned by participants (Deirdre, Ivonne, Jackie and Max).

I use Dropbox, lots, on a day-to-day basis. Just because I'm between three, four campuses, Dropbox works, and between different platforms—I have a Mac at home. Dropbox really works, Evernote really works, it's how I organize my life. Personal and professional. (Deirdre)

Nancy noted the downside to using these tools in an organizational context when speaking about solutions that have been implemented or considered for the service desk:

Google Apps are designed for individuals, not for groups. So we've had to do some sort of fancy footwork to try and figure out [how to implement them].

Indeed, while it is possible to create group accounts that permit file-sharing on Google Docs, Nancy noted that there is a limit to how many members can be assigned access to it. If the limit is exceeded, documents need to be shared with individuals who have their own Gmail or Google Docs accounts. This makes it difficult to implement consistently across a community of workers, although it can work well—as evidenced by the comments above—when individuals come together to collaborate on different projects.

Social tagging websites did come up in a few interviews (Deirdre, Helen and Jackie). Interestingly, none of the examples of use these participants provided could be described as a 'social' use, or contributing to a folksonomy. Rather, all examples indicated that these participants used social tagging (i.e., Delicious, a

social tagging website) to arrange their bookmarks in order to improve their work productivity.

The distinction between these collaborative or productivity tools and social media is that they are not designed to generate and host dialogue. It is, therefore, interesting that something like Google Docs, according to participants, does a better job of facilitating collaboration and, thus, generating a dialogue in the form of organizational knowledge sharing, than existing implementations of internal blogs or intranets.

5.10. Summary

This chapter represents a comprehensive report of the data collected in this study, successfully identifying *what* social media are being used in academic libraries, *how* they are being used and *why* academic librarians are using (or not using) them. I began by challenging the concepts of ‘internal’ and ‘external’ in the context of organizational knowledge sharing. I then systematically developed a narrative account of social media implementations in the studied libraries, based on the interviews with participants. These implementations included internal blogs (i.e., LIP blog, Staffnet blogs), external blogs (i.e., University of Alberta library blogs), wikis (i.e., Campus B wiki, Public Service Manual Wiki), intranets (i.e., LIP, Staffnet), and social networks (i.e., @UofALibraries Twitter account, Cameron Library Facebook page). My narrative reporting included discussion of relevant issues and implications for knowledge sharing practices, loosely related to the Library 2.0 and KM literature, but always relying on the inductive generation of findings proposed by Grounded Theory. I then provided additional findings about related methods of knowledge sharing, such as email, face-to-face interactions, instant messaging and cloud computing, and explored how they influenced the application and perception of social media in academic libraries.

These results permit the emergence of a theory on social media use in academic libraries, which I will present in the next chapter. I will then discuss this emergent substantive theory on social media use in the context of extant theories,

and specifically that of communities of practice (Lave & Wenger, 1991), and its implications for academic libraries.

CHAPTER SIX: DISCUSSION

The primary goal of this research has been to develop an emergent substantive theory of social media use in academic libraries for the purpose of organizational knowledge sharing. By answering the *what*, *how* and *why* of social media use in the sampled libraries through the application of Grounded Theory (GT) approaches (i.e., qualitative coding), a pattern of relationships between concepts emerges to form a framework. This framework of systematically interrelated concepts provides an interpretation of how academic libraries and librarians currently use social media for organizational knowledge sharing. Such a framework is what GT defines as ‘theory’ (Bryant & Charmaz, 2010, 610; Glaser & Strauss, 1967, 79; Strauss & Corbin, 1998, 22).

This chapter will describe this theory, first in the way it is derived from qualitative coding, and secondly as it emerges in the form of interrelated, overarching themes implied in the results. It will then explore this theory and the results presented in the previous chapter to determine what it reveals about knowledge management and communities of practice in academic libraries. The second half of the chapter will discuss my emergent theory in the context of other theories or models proposed in literature I introduced in Chapter Two (“Literature Review”). This will open up my results and interpretation to other discourses on knowledge sharing, and determine the validity of my theory in the broader fields of knowledge management (KM) and LIS. Each section will conclude with a list of practical implications for knowledge sharing in academic libraries based on its engagement with the issues presented in my research.

6.1. Emergent Theory

As discussed in Chapter Four (“Coding Process”), Strauss and Corbin (1998) define theory as “a set of well-developed categories that are systematically interrelated through statements of relationship to form a theoretical framework that explains some relevant phenomenon” (22). I applied this definition of

‘theory’ in the context of qualitative coding, and described it by explaining the integration of process and structure (section 4.4). This formulation of the concept of ‘theory’ still applies in the broader context of what Bryant and Charmaz (2010) define as “substantive theory”: a theoretical interpretation or explanation of a delimited problem (i.e., social media use for organizational knowledge sharing) in a particular area (i.e., academic libraries) (610).

Theory emerges from my research in two distinct yet interrelated ways: first, through the systematic categorization of themes and concepts that took place in my analysis, and second through the network of thematically-linked findings presented in my interpretation of results. My qualitative coding generated results from interviews in the narrative reports presented in the previous chapter, thus highlighting a set of overarching themes in the form of findings. The following sections will describe the grounded theory of my research from these two perspectives. A third theoretical outcome suggests itself from results, expanding beyond the original scope of the research. This outcome will also be discussed below.

6.1.1. A framework for substantive ‘grounded’ theory

Table 4.1 and my application of the knowledge organization model described in Chapter Four suggest a particular framework for studying how social media are used for knowledge sharing in academic libraries. It is important to remember that this categorization of themes and concepts was allowed to emerge from interviews, through the iterative process of qualitative coding; this process represents the inductive method that distinguishes GT from other methodological approaches. There are six key relationships emerging from analysis that manifest this framework (see also Table 4.1 and Appendix Three, “NVivo Codebooks” for alignment with coding structure):

1. The relationship between **objects/media** (i.e., social media and other media for knowledge sharing, or MEDIUM) and **practices** (i.e., activities that support knowledge sharing, or ACTIVITY): this relationship tells us

what social media support *what* knowledge sharing practices and *how* they do so.

2. The relationship between **statements about use** (i.e., USE METRIC) and specific **objects/media** and **practices**: this relationship provides important information about *what* is being used and *how* academic librarians and library staff are using it.
3. The relationship between **statements about personal values** (i.e., ATTITUDE) and specific **objects/media** and **practices**: this relationship tells us *why* academic librarians and library staff use social media, and in *how* they perceive their use in the contexts of their various social identities (organizational, professional and personal).
4. The relationship between **concepts** (i.e., KEY CONCEPT, representing statements related to relevant conceptual models or discourses that can further expand understanding of use) and specific **objects/media** and **practices**: this relationship tells us *how* social media facilitate knowledge sharing and communities of practice, and what role they play in knowledge management practices. They also provide important information about *why* social media in academic libraries are associated with particular discourses (e.g., “dialogue”, “access to information”, “fun”, “virtual office”).
5. The relationship between **statements about personal values** and **statements about use**: this relationship provides important information about *how* and *why* elements of social media use (e.g., ease, frequency, advantages/disadvantages, needs) affect perception of use (e.g., “appropriate” use, “need for standards”, “discretion”/privacy).
6. The relationship between **concepts** and **statements about use**: this relationship tells us *how* use is defined within particular discourses (e.g., how are “user needs” defined within “communities of practice”?)

These six statements of relationship between the conceptual categories of my coding are not exhaustive, meaning that there are other relationships between concepts that can and do take place. For instance, it was possible for me to

examine the intersection between KEY CONCEPT (“concepts”) and ATTITUDE (“statements about personal values”), allowing me to hypothetically answer a question such as “what do librarians’ opinions about the importance of social media in their lives have to do with ‘communities of practice’?” However, in my analysis, this intersection rarely produced relevant results (see my discussion about relevance and coding in sections 4.2.4-5). The categories identified in my coding are also not the only categories possible in the study of social media use or knowledge sharing; there are almost certainly other categories that might emerge in interviews with participants from other academic libraries or organizations, and these might suggest new relationships between concepts that could be extensible to my framework. This is the nature of “abductive induction” (Peirce, 152); my interpretation (i.e., substantive theory) is merely the most likely explanation based on the observed facts, among any number of other possible explanations that cannot be determined without further research. These other “possible” relationships are depicted as a dotted line between concepts in Figure 6.1.

Figure 6.1 represents one possible graphical representation of these six relationships as a framework; as a representational model, this demonstrates my current state-of-work. This model has already generated some discussion with committee supervisors, particularly regarding the nature of theorized relationships and if there are some relationships that are more essential than others. Ongoing discussion has produced alternative models that depict these same six relationships using different metaphors to describe their interactions, and can be referenced in Appendix Seven (“Theoretical Framework: Alternative Models”).

The six relationships listed above, however, are the principal relationships that ultimately structured my analysis, and therefore represent the foundation for my substantive theory. Together, these six statements can provide a “theoretical explanation” (Bryant & Charmaz, 2010, 610) for how social media are used in academic libraries for organizational knowledge sharing (Figure 6.1). In providing such a theoretical explanation, this framework opens up discussion on the subject of organizational knowledge sharing in academic libraries and other

organizations, and how such a process might be further explored and conceptualized.

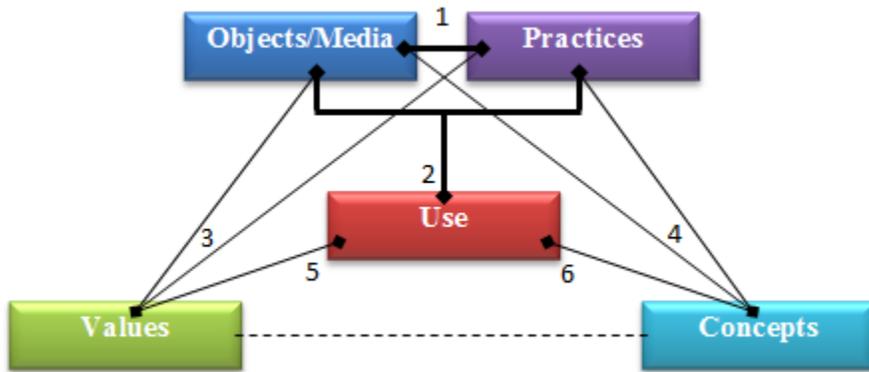


Figure 6.1: Framework for studying how social media are being used for knowledge sharing in academic libraries. Statements of relationship are identified by number, and represented as a solid line between two or more conceptual categories.

6.1.2. Theoretical interpretation of social media use in academic libraries

The results presented in Chapter Five (“Results”) reveal key findings about how social media are being used in academic libraries. A summary of those key findings provides us with an interpretation of academic librarians’ use of social media for organizational knowledge sharing, fulfilling Bryant and Charmaz’s broader definition of a “substantive theory” (2010, 610). Chapter Five provided comprehensive reports on the identified types of social media (i.e., blogs, wikis and social networks; section 2.3) and examples of these types represented in specific implementations (e.g., LIP blog, ‘Online Public Service Manual’ wiki, @UofALibraries) that were discussed in interviews, and how participants characterized their usage. There were several implementations of blogs, both internal and external, that served the purpose of organizational knowledge sharing (section 5.2). Implementations of wikis were also discussed that significantly contributed to the creation and dissemination of organizational

knowledge (section 5.3). The key finding from the described implementations of both of these social media types was that they were used primarily for the documentation of explicit knowledge, and were regarded by most participants as inappropriate or ineffective for the purpose of dialogue and for the sharing of tacit knowledge (sections 5.2.6 and 5.3.5). Another significant finding was that social networks were used for organizational knowledge sharing *only* when oriented externally toward library users, and again primarily for the dissemination of explicit knowledge (i.e., “announcements”) (section 5.4). Examples of dialogue with social networks’ users were very limited, and could hardly be characterized as conversations (sections 5.4.1 and 5.4.2). A third finding suggested that, while intranets hosted a number of dynamic functions (e.g., blogs, wikis, user profiles), these were very rarely used (section 5.3). Meanwhile, participants’ professional and personal use of social media told a different story; although use of blogs, wikis and social networks for socialization were sometimes limited by the participants’ time or personality traits (e.g., self-described “lurker”, Deirdre, in section 5.5.4), almost all participants self-identified as active users of social networking websites, and several actively used blogs in either their professional or personal lives. Not only was Web 2.0 technology familiar, some participants even expressed a wish that organizational communications were better structured around these participatory media for creating and sharing information collaboratively (i.e., Jackie and Max, section 5.4.3). The desire to have intranets that are more “Facebook-like” or “Twitter-like” emerged from conversations with these participants. As a fourth, more generalized finding, this disconnect between existing organizational implementations’ ineffectiveness in facilitating dialogue (sections 5.2.6, 5.3.5, 5.4.5, 5.5.5) and the success of popular instances of these same types of social media in personal interactions (sections 5.2.5, 5.5.4 and 5.5.5) is significant for understanding the current state of organizational social media use; in other words, academic libraries *have* and *use* social media, but they *do not* use them in *social* ways, nor in ways that prove much more effective than traditional knowledge sharing practices (i.e., face-to-face interactions, email, telephone; sections 5.6-9). Finally, a fifth finding is observed in participants’

anxieties toward social media, and its application in organizational and professional contexts. Most participants expressed concerns about sharing too much of themselves in organizational or professional contexts (e.g., Jackie, sections 5.2.5 and 5.5.4; this anxiety is more generally characterized in sections 5.2.5, 5.3.4, 5.4.4 and 5.5.4); these interviews revealed a great deal about the social construction of academic librarians, and the ways in which it manifests through social media. The associations of social media interactions with one's personal identity, this finding suggests, make it challenging for librarians to perform those same sorts of informal interactions when it relates to their professional or organizational identities. In this way, the expression of such anxieties serves as a likely explanation for the lack of success of organizational social media. This finding also emphasizes the fluid boundaries between what is considered 'organizational' knowledge sharing, and 'professional' and 'personal' interactions.

In summary, social media are being used in the studied academic libraries for one-way explicit knowledge sharing, but have so far not proven effective in supporting virtual environments where dialogue and the sharing of tacit knowledge can take place. The use of social media for internal knowledge sharing is an area that is underserved, in the manner described by Freddy, and which I will revisit before the end of this chapter: "the cobbler's son has no shoes." The potential effectiveness of social media is evidenced in librarians' examples of professional and personal use (sections 5.2-5). However, the anxieties librarians have expressed about the risk of merging their social identities through the use of social media is almost certainly an obstacle that will need to be overcome if social media are to be used to advantage in academic libraries.

This interpretation identifies a number of overarching themes which pose new questions to be explored in future research:

- What is 'community' and how is it manifested in organizational implementations of social media? How do members distinguish organizational communities from professional or personal ones?

- What role can social media play in the delivery of formal and informal training, as essential components of knowledge management?
- Can social media facilitate the sharing of organizational knowledge, in particular tacit knowledge, between physically disparate units or branches? If so, what are the conditions necessary for it to take place?
- How do users' perceptions of 'privacy', 'confidentiality' and 'discretion' affect the way in which academic libraries and organizations implement social media? How do they affect the way users use them?

This chapter will address these issues based on the study's results and in conversation with the literature discussed in Chapter Two ("Literature Review"). Avenues for future work will also be summarized in Chapter Seven ("Conclusions").

6.1.3. Model for the Social Construction of the Academic Librarian

The need to examine the attitudes and motivations of participants in their personal use of social media to provide context for their organizational applications has yielded an extremely valuable and unexpected outcome. The focus on "academic *librarians*" in my second research question, rather than "academic libraries", has generated rich information on how academic librarians perceive themselves in their use of social media. With this information, I have developed a theoretical model for the social construction of the academic librarian (Figure 6.2).

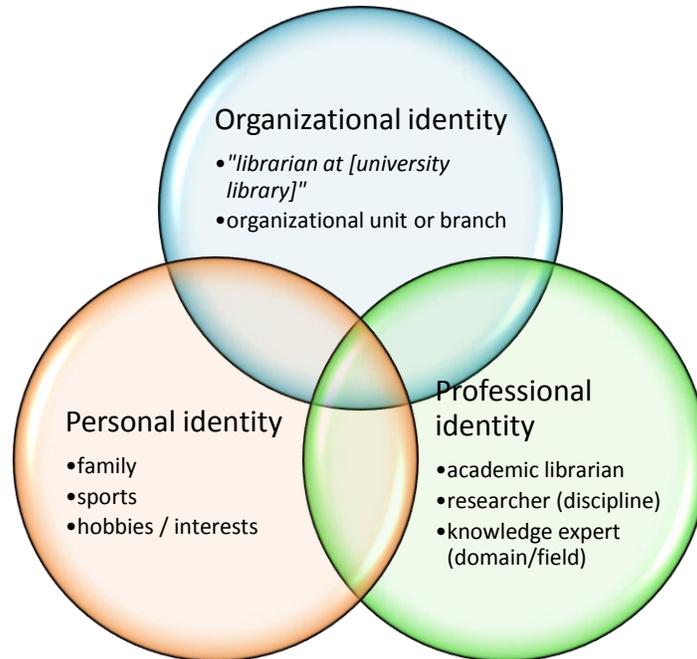


Figure 6.2: *Model for the social construction of the academic librarian.*

Based on interviews, the academic librarian consists of many successive layers that form his or her social identities. These layers can be reduced, at a minimum, to the three levels identified in Figure 6.2: ‘organizational’, ‘professional’ and ‘personal’. Interview participants described themselves variously in these different contexts, often when explaining how they used social media. For instance, Ivonne discussed her use of Twitter to follow her son’s races (section 5.5.4). That was an example of use from her personal life. Beth and Jackie repeatedly mentioned following “librarian things” or “library stuff” on social media in interviews (e.g., section 5.5.4); these are examples from their professional lives, but the opportunity for interaction with the sources of information and to disseminate that information to others on social media presents the possibility for overlap with the personal and the organizational. Elaine’s use of social media was almost completely limited to the LIP blog, which she could only use to communicate with other library staff members (section 5.2.5). Gloria gave the best example of the separation of these contexts in her use of Twitter:

she had a Twitter account that she used on behalf of the library (@UofALibraries), a personal account that she used for her professional interests with faculty, researchers, and colleagues, and a private account that she only used with friends (Section 5.5; Figure 6.3). Lee provided the best example for the merging of these contexts; he used Facebook to keep track of his personal interests as a musician and to stay in contact with family, he used it to communicate with colleagues and collaborators outside the university, and he occasionally used it to communicate with co-workers and students (Section 5.5.4; Figure 6.4).



Figure 6.3: *The social construction of Gloria (on Twitter).*



Figure 6.4: *The social construction of Lee (on Facebook).*

It is important to recognize that identity, in this model, correlates with the academic librarian's 'community'. The interview participants characterized their use of social media in relation to different *communities*, and these communities reveal something about the way they each manage their interactions. In describing their use of social media, participants also described the different communities they participated in through social media; these communities can be reduced, at a minimum, to three categories: 'organizational' communities, 'professional'

communities and ‘personal’ communities. This correlation will be important to keep in mind when the concept of ‘communities of practice’ is applied to study results in the next section (6.2).

6.1.3. Practical implications

Based on the expressed desire for change noted above (section 6.1.2), academic libraries should ensure that existing practices and technologies effectively support the sharing of tacit knowledge through dialogue around the organization (i.e., internally, externally, and in-between). If existing practices demonstrate a lack of support for this type of organizational knowledge sharing—a particular challenge for communication between disparate work groups or at a system level, as observed in the limitations to relevance and use of the LIP blog (section 5.2.1) and reservations about the use of prevalent technologies such as email (section 5.6)—the potential of social media for this purpose, and especially of social networks, should be explored. Any implementation resulting from this assessment should take into consideration three important factors highlighted by my findings: 1) it will require a sustained engagement and support from administrators; 2) it must meet the varying knowledge needs of different individuals and groups; 3) it must have clear guidelines about how it will manage interactions of a non-organizational nature, in order to address the concerns about privacy and personal space of its users.

All three of these considerations play an important role in the formation and support of organizational communities. The next section will address the first two in particular in the context of ‘communities of practice’, and its relevance to my substantive theory on social media use.

6.2. The Academic Librarian’s Communities of Practice

6.2.1. What is ‘community’?

An interesting thing happened in the process of conducting interviews. ‘Communities of practice’ (CoPs) represented its own section of the interview guide, and was consistently addressed to the participant early in the interview

(Appendix Two, “Interview Guides”). This was done by design to identify the role of ‘community’ in the work environment from the outset, since the needs of any organizational and professional communities should play a fundamental role in how social media were used by librarians—and if they did not, that would also prove a noteworthy finding. In the first set of interviews with the Grant MacEwan University librarians, I would read aloud the classic definition of the concept for the participant, and then ask them if and how such a thing existed in their library and with the people they interacted with in their work on a daily basis:

A community of practice is “an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their community.” (i.e., Lave & Wenger, 1991, 98)

I noticed, however, that use of this definition tended to cause more confusion than it resolved. In four of the first five interviews, I was asked to repeat or clarify the definition. The phrase “activity system”, in particular, seemed difficult to parse; what did that mean? What sort of activity? In what way was it systematic? On one of these occasions, the participant (Beth) asked, “so, it’s just a system of sharing? If we break it down?” It occurred to me that, while it was simplistic—or perhaps because it was—a “system [for] sharing” did a much better job of capturing the concept than Lave and Wenger’s excerpted definition ever did. In later interviews, I provided a print handout with a slightly longer definition that redefined “activity system” as an “informal network of exchange among practitioners” (Hara, 2009, 3). Even then, participants struggled with the concept, and their answers would often focus on the general idea of “community” in the organizational environment, rather than on the community of practice as an informal, self-organizing network of practitioners.

This confusion is not surprising given an inherent ambiguity about CoPs. Conceptually, the CoP has two distinguishing features: (a) it focuses on the learning and knowledge sharing interactions of a group of practitioners (e.g.,

academic librarians); (b) it can form based on *ad hoc* interactions between practitioners over a shared domain and shared practices, rather than by intentional design (Lave & Wenger, 1991; Wenger, 2006). A disagreement around what can actually be considered a ‘community of practice’ has taken place since Lave and Wenger (1991) first defined it, based on the perceived importance of the second feature (Hara, 2006). This disagreement is demonstrated in the literature. For example, in the *Encyclopedia of Communities of Practice in Information and Knowledge Management* (Coakes & Clarke, 2006), the authors provide a surprising variety of CoPs that can manifest in organizations, professions, and around shared interests, and yet—paradoxically—they repeatedly emphasize the ‘informal’ nature of learning in CoPs and the importance of self-organization around *ad hoc* interactions. Originally, a CoP was not something that was artificially created or defined, like departmental units in an organization; it emerged *organically*, as in the complex and informal relationships and networks of exchange Lave and Wenger (1991) observed in apprenticeship relationships, through what they referred to as “legitimate peripheral participation” (23; Hara, 2006). However, as the concept has become increasingly popular and has expanded to include a variety of distinct community formations (Coakes & Clarke, 2006)—particularly since its adoption into the KM literature (e.g., Brown & Duguid, 1991, 1998, 2002; Wenger, 2004)—the emphasis on self-organization as a gradual process of legitimation through informal or “peripheral” engagement has shifted; by further exploring the role of identity in practice and community formation, Wenger (1998) moves toward a more inclusive definition of CoPs. More recently, Wenger (2006) provides an explanation that suggests this organic self-organizing property of communities of practice is not a *requirement*—as Coakes and Clarke (2006) sometimes imply—and rather a *feature*, as I characterized it above: “Note that this definition allows for, but does not assume, intentionality: learning can be the reason the community comes together or an incidental outcome of member’s interactions.” Moreover, while it is possible for *online* communities of practice to self-organize, the digital medium needs to be established among the community’s members—and this requires intent to design,

even if it is simply designing the environment in which a community can grow (Hara, 2006, 120).

My use of ‘communities of practice’ relies on this later, expanded definition of the CoP. In Chapter Two (“Literature Review”), I use Coakes and Clarke’s (2006) categorization of four different classes of communities or “networks” of practice, which include internal communities and organizational communities, as a frame of reference for the types of communities my research is interested in. Both of these could be considered ‘semi-formal’ variations on Lave and Wenger’s original notion of an “activity system” (1991, 98) formed through “legitimate peripheral participation” (23). The relationships around which such communities form can be personal, professional or organizational. These relationships are determined by three shared attributes: (a) domain of interest, (b) community discourse and (c) practices (Wenger, 2006). It is the presence of these three attributes that distinguishes the CoP from the more basic definition of ‘community’. In order for CoPs to persist *in organizations*, a fourth criteria must be fulfilled: CoPs require a sustained commitment from administrators and leaders to encourage, support and guide them (Coakes & Clarke, 2006; Brown & Duguid, 1998). The emphasis placed in this definition of the concept is on learning and knowledge sharing occurring through informal and semi-formal networks of relationships, rather than on the principle of self-organization. Therefore, the shift in emphasis makes it both accurate and appropriate to describe the CoP as, first and foremost, “a system of sharing”.

My research was primarily interested in determining whether or not communities of practice existed in the studied libraries that supported the organizational knowledge sharing practices of staff (section 2.11). Beyond this primary outcome, I was also interested in learning if and how other types of communities of practice arose in participants’ examples. The following sub-sections will address these goals by drawing out the organizational, professional and personal communities of librarians apparent in the study’s results.

6.2.2. *Organizational Communities*

As mentioned above (section 6.1.3), the social construction of the academic librarian can be viewed in terms of identities or communities. The two concepts are integrated; an individual's identity is shaped by the communities he engages in and considers himself a part of. The study's participants provided a few rich examples of organizational, professional and personal CoPs, particularly in the way communities manifested through the use of social media.

Coakes and Clarke (2006) define one class of organizational CoPs as 'internal'—meaning that they exist entirely within the organization—and characterize it as supporting the activities of existing organizational networks, such as a project teams, work groups and committees, and *ad hoc* collectives. Based on interviews, a number of these were evident at the Grant MacEwan University Library and at the University of Alberta Libraries. Here are just a three examples that emerged from interviews:

- *MacEwan Reference*: There was clearly a community of librarians and staff around research and reference activities at the Grant MacEwan Library. This community loosely mirrored the departmental unit of the same name, but distinguished itself by representing a core of tightly-knit relationships between members that shared practices around reference and instruction at the main campus. This geographic factor limited the participation of Deirdre, for example (section 5.2.1). The LIP blog supported interactions between members of this community, particularly as a notice board for news and feedback relating to activity at the reference desk (sections 5.2.1, 5.2.5-6).
- *Campus B Library IT and public service*: The Campus B wiki described by Deirdre supported a community of library staff members (section 5.3.2). This community seemed to bridge existing unit divisions between IT staff, borrower services/circulation staff and campus librarians. It shared practices around the delivery of operational library and support services to students and faculty at Campus B.

- *Rutherford Coffee Group*: Ivonne repeatedly described a regular informal get-together between Rutherford librarians to commiserate and exchange stories about their work over coffee (sections 5.6-7). While it was not clear if these informal meetings included all librarians from that library, they did seem to organize around membership to that particular organizational unit. Ivonne noted an instance when they encountered another group of librarians from a different branch, suggesting that the community defined itself based on its branch (i.e., Rutherford) and/or disciplinary (i.e., humanities and social sciences) associations. Ivonne implied that these informal meetings were a great way for her to ask her colleagues for help with difficult questions or problems encountered in her work (section 5.6). There was no evidence that any social media played a role in supporting this community.

The example of the *MacEwan Reference* CoP is a particularly useful one for understanding the social construction of its members. In Chapter Five (“Results”), when discussing the implementation of the LIP blog, I included a memorable statement by Deirdre, in which she said: “It doesn’t meet my need” (section 5.2.1). She clarified this in the interview by explaining that the blog posts simply were not relevant to her work at the Campus B library, given that they focused on activities at the main campus. Deirdre’s lack of use does not necessarily suggest that she was not a member of this internal CoP, but rather that her engagement in that community and with their practices was less important in her own social construction. It also indicates that the LIP blog did not facilitate her participation within that community. On the other hand, Carol, also a librarian from a satellite campus, identified herself as an active participant on the LIP blog (Ibid.); her social construction as academic librarian at Grant MacEwan relied more on membership to the CoP than it did Deirdre. Moreover, as discussed in the last chapter, Carol’s persuasion of her campus staff to use the blog to access “small pieces of information” (Ibid.) suggests that the LIP blog did prove useful for the sharing of organizational knowledge, even outside the boundaries of the CoP.

A study directed at examining the formation of relationships within these internal CoPs would prove valuable in identifying exactly how they are constructed, how they affect members' identities, and how social media can support them. My own research represents a first step in that direction by identifying the existence of specific internal CoPs.

6.2.3. Professional Communities

There were two CoPs that were alluded to in interviews that were less obviously related to organizational divisions. Freddy's attempt to implement a blog for use with other librarians from the CLA conference in the same disciplinary domain suggests that a CoP of librarians serving that particular discipline does exist in Canada (section 5.2.5). This is an example of what is, ostensibly, a self-organizing network of practice, according to Coakes and Clarke (2006). Jackie's role in the WILU wiki also represents the formation of a professional CoP around the organization of a conference on library instruction (section 5.3.2). This is an example of a formal network of practice, which spans organizations but are not part of other formal relationships (Coakes & Clarke, 2006); in this case, the steering of a conference for librarians involved in delivering instruction, involving both a knowledge of the practitioners' domain and a knowledge of practices around professional event planning. This CoP diverges somewhat from Coakes and Clarke's definition, given that the conference was being held at Grant MacEwan University, and therefore the work group necessarily included several members from the University Library's staff; this suggests that relationships within the organization did necessarily play a part in the CoP's formation.

Beth and Jackie's use of Twitter to follow "librarian things" also suggests that they identify themselves within a particular professional community (sections 5.5.4 and 6.1.3). The information provided in interviews is insufficient to indicate whether or not these might constitute CoPs, but it is certainly possible that academic librarians use social networks like Twitter and Facebook to participate in informal communities of librarians not restricted by geography, that share

stories and expertise around academic library practice. Lee's use of Facebook to communicate and collaborate with students, faculty and researchers at other institutions is also an example of social media supporting professional community (section 5.5); again, this example was not sufficient to suggest the existence of a CoP. Helen and Nancy both indicated that they maintained a network of professional contacts by attending conferences (sections 5.2.5, 5.5 and 5.7). While their examples were not specific enough to provide actual instances of CoPs, they certainly suggest that professional communities play an important part in how participants defined themselves and their work as academic librarians.

6.2.4. Personal Communities

A number of communities were mentioned when discussing participants' personal use of social media. The most detailed example occurs in Lee's use of Facebook (section 5.5.4) and MySpace to engage in a CoP of local musicians. In this example social networking sites (SNS) were essential to the way the CoP shared important information and stories about groups, performances and playing. This instance is another example of a self-organizing network of practice (Coakes & Clarke, 2006). In my interview with Lee, it was clear that this was an important part of his identity. Lee went on to describe the way he organized pages on his personal blog; personal interests such as music, electronics and travel appeared alongside professional interests (such as a page for "Library") and profile information related to his career as a librarian (section 5.2.5). His example provides evidence of a social construction where the organizational, professional and personal communities can merge (Figure 6.4).

6.2.5. What does this mean for organizational knowledge sharing?

Most relevant to my research are the examples of organizational CoPs. The three examples described above clearly support organizational knowledge sharing at Grant MacEwan University Library and the University of Alberta Libraries. In some cases, they support knowledge sharing on a limited scale; the 'Campus B' CoP only facilitates KM at Campus B, and the 'Rutherford Coffee' CoP is only really useful for harnessing the collective intelligence of the

University of Alberta librarians that work in humanities and social sciences. In others, like the ‘MacEwan Reference’ CoP, they include the sharing of knowledge and expertise that can be valuable and transferable across the organization.

Social media implementations support the sharing of knowledge in some but not all of these examples, and even then they do so in a limited way. None of these implementations fulfill the criteria to be considered online communities of practice, as defined in Chapter Two (Hara, 2009, 120). Based on interviews with participants who also served in a leadership or administrative capacity in their roles as academic librarians (Deirdre, Helen, Max and Nancy), I would suggest this is because the social media implementations discussed rarely receive the sustained commitment they require to successfully serve that purpose. At best, social media merely facilitate existing organizational CoPs that are manifested primarily through face-to-face and email interactions.

Examples of organizational, professional and personal CoPs evident in my research support the model for the social construction of the academic librarian generated by my theory of social media use. A targeted study applying the principles of CoP as detailed by Wenger (1998) would permit a more in-depth exploration of the CoPs that exist in academic libraries, and how academic librarians socially construct their professional identities through these communities. Such a study could confirm the validity of my model in the context of CoP. My theory and findings set the groundwork for future research on communities of practice in academic libraries.

6.2.6. Practical implications

- CoPs can and do exist in academic libraries, and support organizational and professional communities of librarians in their work through the sharing of domain-specific knowledge.
- While online CoPs supported by social media are certainly possible (e.g., Hara, 2009), the implementations observed in my study are not robust enough to represent such.

- An online CoP would need to support the sharing of tacit knowledge through dialogue.
- In order for online CoPs to exist in academic libraries, they require committed and sustained support from library administrators and managers.
- The technology (i.e., social media) by itself does not represent a community, nor does it generate enough engagement on its own to shape the domain, relationships and practices required for a CoP to form. It is merely a tool to facilitate the development of these three criteria, and thereby improve organizational knowledge sharing. This is a fact academic libraries would be wise to note before attempting to implement social media as tools that support CoPs.
- Online CoPs, like social media, are defined by *users*. Without a community of active users, there cannot be an online community of practice.

6.3. Classifications of Knowledge Sharing

In order to situate my emergent theory of social media use in discourse on KM, it is useful for me to discuss it in the context of knowledge sharing classifications. In Chapter Two I discussed three different models for knowledge sharing: the “groupware matrix” used by Berry (2011) and Mittleman and Briggs (1998) to situate interactions in time and space, Chu et al.’s classification of social networking sites’ (SNS) interactions (2012) and Nonaka’s knowledge spiral (1994). In this section I will apply the different social media implementations revealed in my results to each of these models. This will determine the versatility of my theory as a contribution to the existing body of knowledge in the field of KM, while also adding insight to my findings.

6.3.1. Interactions in Time and Space

It is possible to break down virtual (i.e., online) interactions into four categories: 1) same time / same place (STSP), 2) same time / different place (STDP), 3) different time / same place (DTSP), 4) different time / different place

(DTDP) (Berry, 2011, 189; Mittleman & Briggs, 1998, 256-263). This allows us to determine whether a given implementation is synchronous or asynchronous, and whether it must be localized in a physical space or if it occurs across great distances. There is also a fifth category for interactions that occur any time / any place (ATAP); this is the ideal for any virtual medium of organizational communication (Mittleman & Briggs, 1998, 264)

Figure 6.5 situates the two internal blog implementations identified and discussed in the previous chapter using the “groupware matrix” suggested by Mittleman and Briggs (1998). While the functionality for both implementations allows for ATAP interactions, actual use revealed in interviews indicated that their application was far more limited. The LIP blog primarily facilitated announcements related to the main campus reference desk; while most participants indicated that they would refer to the blog throughout the day, none of them suggested that it was ever used to maintain a sustained, synchronous conversation (sections 5.2.1 and 5.2.4). For this reason, interactions are mostly characterized as DTSP. University of Alberta Libraries staff checked the Staffnet blogs irregularly (Ivonne), and rarely used them except to record meeting minutes (Gloria) (section 5.2.2). For this reason, it is characterized as asynchronous. Since participants from both Rutherford and Cameron libraries indicated that they had, at some point, accessed the blogs, it can be concluded that use was not particularly limited by space.

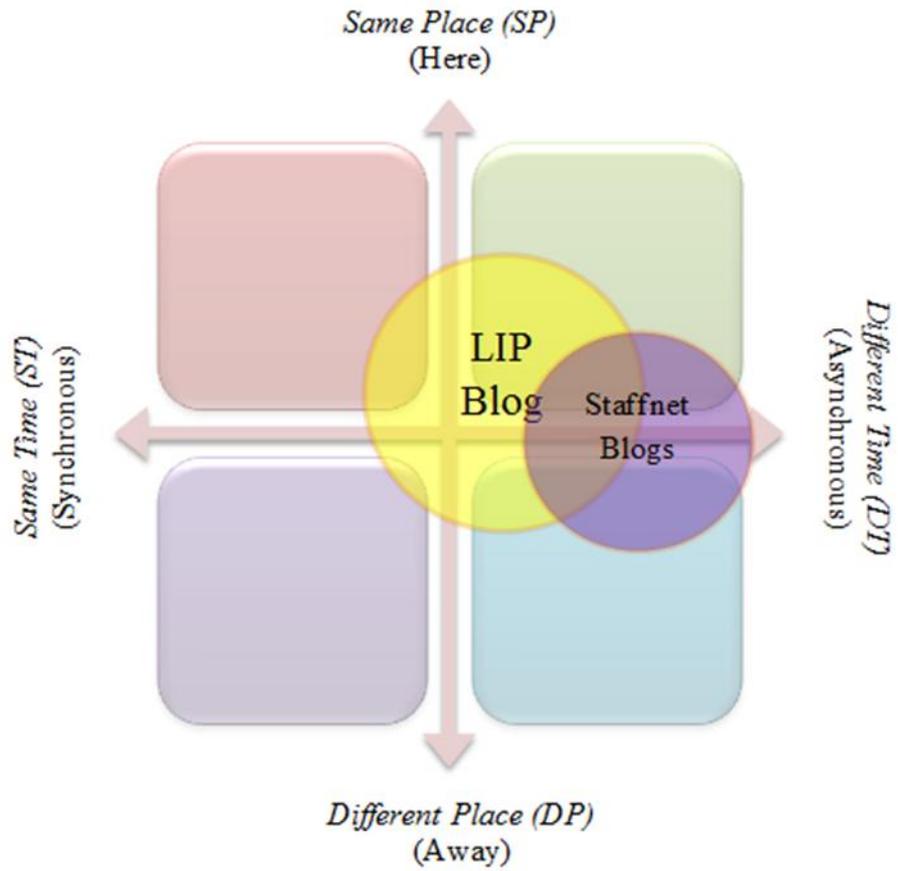


Figure 6.5: Internal blog implementations (LIP Blog and Staffnet blogs) mapped to groupware matrix.

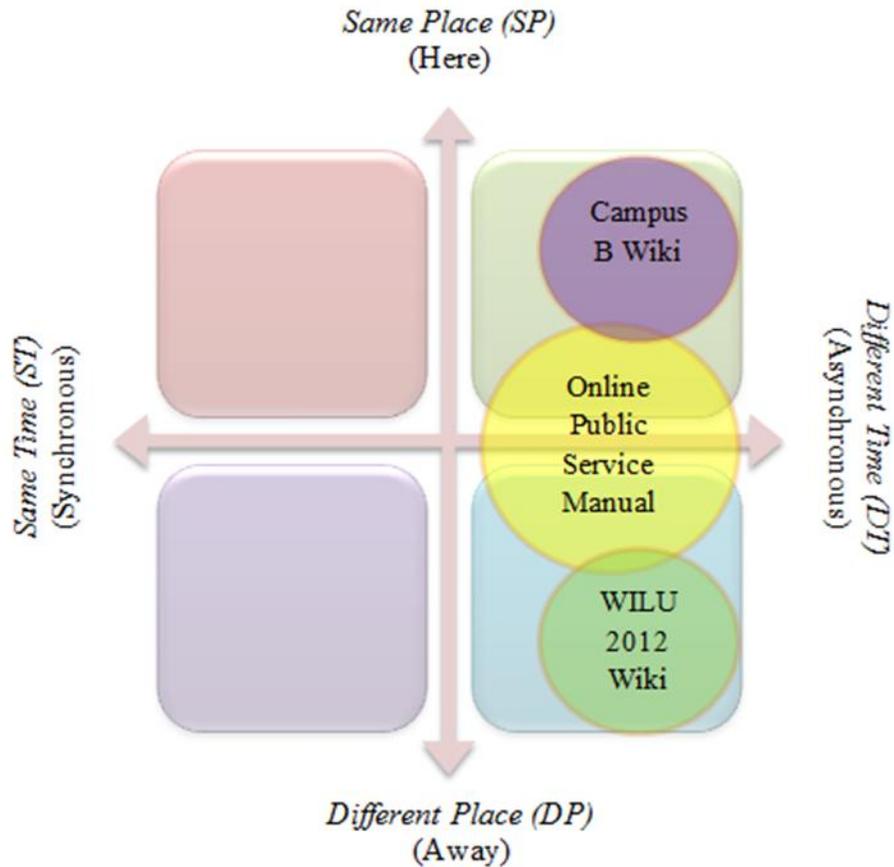


Figure 6.6: Wiki implementations ('Online Public Service Manual', Campus B Wiki and WILU 2012 Wiki) mapped to groupware matrix.

Figure 6.6 maps the three wiki implementations identified in results. All three wikis are used primarily to support asynchronous use, as tools to facilitate documentation of explicit knowledge for later retrieval and reference (section 5.3). However, their use across space is varied; the Campus B wiki, recording processes specific to the Campus B library branch within the Grant MacEwan Library system, is localized to a very narrow geographic space for which it is relevant (section 5.3.2). As such, it can be concluded that interaction with the wiki occurs in the “same place”. The WILU 2012 wiki, on the other hand, coordinates information between WILU steering and planning committee members that are separated geographically (Ibid.). In this case, interaction occurs in different places. The ‘Online Public Service Manual’ used by the University of Alberta

Libraries staff is system-wide, meaning that it supports use in all branches, and as such is not limited in space (section 5.3.1).

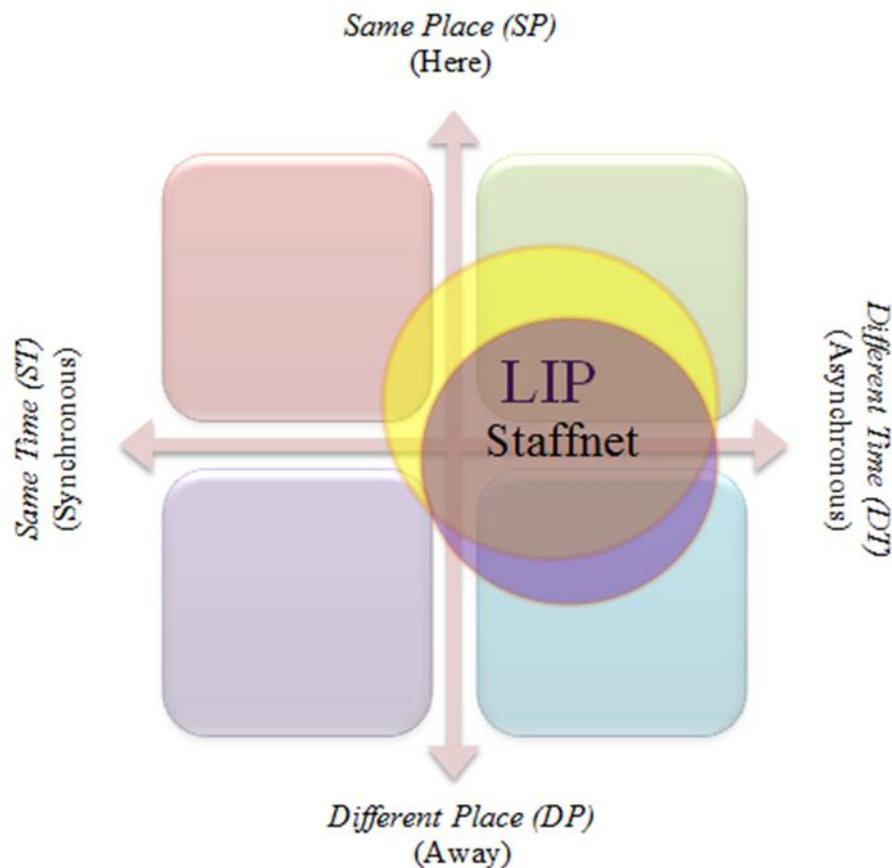


Figure 6.7: *Intranet implementations (LIP and Staffnet) mapped to groupware matrix.*

Figure 6.7 locates the Library Intranet Portal and Staffnet as intranet implementations, which includes participants' descriptions of them as both information repositories and portals for organizational communication (section 5.4). Again, use for communication—limited as it was—was characterized as asynchronous; like wikis, the limited collaboration that occurred around shared information (i.e., when users accessed information, when they added updates, comments or changed existing documentation) spanned days or weeks. The activity on the LIP blog and the observed focus on main campus practices would suggest that the MacEwan Library intranet tended toward slightly more

synchronous communication and “same place” interactions than University of Alberta’s Staffnet (sections 5.2.1, 5.4.1 and 5.4.2).

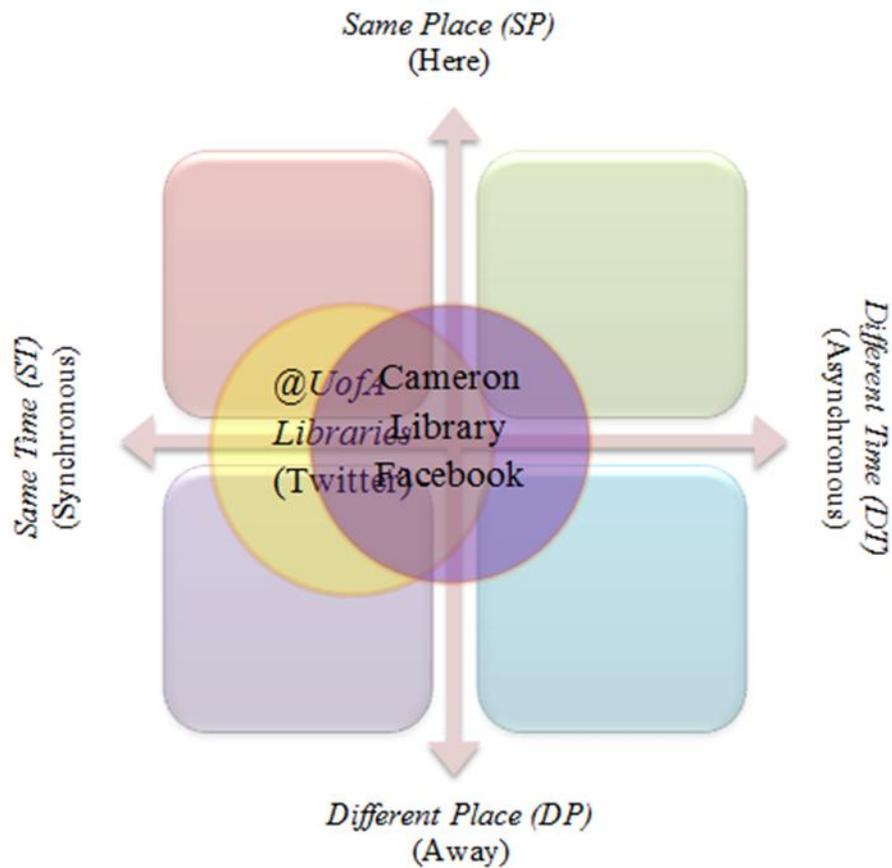


Figure 6.8: *External online social network implementations (@UofALibraries and Cameron Library Facebook page) mapped to groupware*

Figure 6.8 maps the two SNS implementations at the University of Alberta Libraries. Both more evidently facilitated synchronous interactions as easily as asynchronous interactions. The @UofALibraries Twitter account seemed to be more useful for the sharing of current information; while some announcements, such as messages promoting new resources (section 5.5.1, figures 5.1 and 5.4), would continue to be relevant over time, operational and marketing messages such as extended hours or instructional sessions (section 5.5.1, figures 5.2 and 5.3) were only relevant to users for a limited time frame. Moreover, the sort of exchanges that happened on Twitter, as exemplified in Figure 5.6, occurred

virtually in real-time (i.e., a noted response time of 35 minutes). Facebook interactions were slightly less synchronous (i.e., the time between the original post and a user's response was greater), and yet featured more messages that were relevant within a limited time frame (section 5.5.2, e.g., Figures 5.7 and 5.9). Neither implementation seemed to be limited in space, although the nature of use and the relevance of interactions tended to be restricted to geographically situated groups of users (e.g., Figure 5.8).

It is worth noting that both SNS implementations were used for external communication with library users, rather than with staff (section 5.5). This means that social media implementations, as described in interviews, failed at supporting internal synchronous ("same time") interactions. This may be explained by the use of other forms of organizational knowledge sharing (sections 5.6-9). The ubiquitous use of email for interactions, for instance, as well as face-to-face interactions, suggests that both libraries have other ways of ensuring knowledge is shared synchronously (Figure 2.5). In this sense all four categories for interaction are supported within these organizations, with varying degrees of overlap between media; however, there is no single social media implementation recorded in interviews that manages to achieve the ideal of ATAP.

6.3.2. *Interactions as Knowledge Flows*

Chu et al.'s (2012) classification of interactions permits an understanding of knowledge sharing through social media that takes into consideration the function it serves for users. This is particularly valuable in contextualizing my theory, since the designation of 'appropriate use' played an important part in how my participants decided when to use different methods (including social media implementations) for communication.

Chu et al. (2012) break their classification down into four categories, or "knowledge flows":

- one-to-many *knowledge sharing*: Librarians or users share information resources with others

- one-to-many *information dissemination*: Updating the news and announcements from libraries
- one-to-one *communication*: Aimed at individuals, conversations that happen between librarians and users, or among users
- many-to-one *knowledge gathering*: Harvesting information from individual users for improving library services, academic research, etc.

I have categorized each social media implementation described by participants using these categories (Table 6.1).

Table 6.1: *Social media implementations observed in interviews categorized according to Chu et al.'s (2012) classification of "knowledge flows".*

Implementation	Knowledge flow	Observed Functions*
Blogs (section 5.2)		
LIP Blog	One-to-many	Information dissemination, knowledge sharing
Staffnet blogs	One-to-many	Information dissemination
External blogs (i.e., Faculty blogs and "Library News")	One-to-many	Information dissemination
Wikis (section 5.3)		
Online Public Service Manual	One-to-many / many-to-one <i>many-to-many</i>	Knowledge sharing, knowledge gathering, <i>knowledge exchange</i>
Campus B Wiki	One-to-many / many-to-one <i>Many-to-many</i>	Knowledge sharing, knowledge gathering, <i>knowledge exchange</i>
WILU 2012 Wiki	One-to-many / many-to-one <i>Many-to-many</i>	Knowledge sharing, knowledge gathering, <i>knowledge exchange</i>

Intranets (<i>section 5.4</i>)		
Library Intranet Portal (LIP)	One-to-many / many-to-one <i>Many-to-many</i>	Information dissemination, knowledge sharing, knowledge gathering, <i>knowledge exchange</i>
Staffnet	One-to-many / many-to-one <i>Many-to-Many</i>	Information dissemination, knowledge sharing, knowledge gathering, <i>Knowledge exchange</i>
Social Networks (<i>section 5.5</i>)		
@UofALibraries	One-to-many / one-to-one	Information dissemination, knowledge sharing, communication
Cameron Library Facebook page	One-to-many / one-to-one	Information dissemination, knowledge sharing, communication
* Observed functions are based on the examples of use provided by participants in interviews and reported in Chapter Five (“Results”).		

The categorization of social media implementations according to “knowledge flows” and functions based on participants’ reported use leads to some interesting observations. First, each type of social media is associated with a particular set of functions. While there was not adequate evidence in interviews to suggest that blogs or wikis supported one-to-one communication (i.e., two-way communication, or ‘dialogue’) at the libraries, the two SNS implementations

seemed uniquely suited to the task. Since both implementations were external, it would be valuable to see if they could facilitate the same purpose in an internal context, as Jackie and Max hoped (section 5.4.3).

Wikis and intranets fit poorly in Chu et al.'s classification, since they seem to be used for a different sort of knowledge sharing altogether that combines "knowledge sharing" and "knowledge gathering". To add on to their classification, I would suggest a fifth category for *many-to-many knowledge exchanges*: the collaborative sharing and gathering of information resources between users. This category would more appropriately describe the manner in which participants used both wikis and intranets in my study. Chu et al.'s finding that the majority of interactions on libraries' social networks were one-to-many information dissemination is supported by the information participants shared in interviews.

6.3.3. Nonaka's knowledge spiral

Nonaka's spiral of organizational knowledge creation (1994; Figure 2.6) is not so much a classification as a model for understanding how knowledge is created, shared and transformed within organizational processes. It describes how knowledge flows from the tacit to the explicit and from the individual to the group through combination, socialization, externalization and internalization. Social media can help facilitate this process; examining my findings to determine if the specific implementations of social media in academic libraries achieve this can provide additional context to my results.

The social media implementations discussed in interviews tended to support the documentation of knowledge (i.e., uni-directional or one-way sharing of explicit knowledge, section 6.1.2). In most cases, this meant the rendering of *explicit individual knowledge* (e.g., a student assignment created or shared with one librarian) into *explicit group knowledge* (e.g., a written explanation of the assignment and list of resources posted on the LIP blog to inform other librarians or staff working at the reference desk). This use would fall into the category of

combination (i.e., explicit to explicit knowledge transfer) (Nonaka, 1994, 19); it is possible in the above example that the initial state of an individual's knowledge was *tacit* (i.e., that it is unformalized: such as an untested solution, based on past experience and only partially formulated, for how to solve a particularly complex research problem posed by a student assignment), in which case the generation of a written explanation shared on the LIP blog would be characterized as externalization (i.e., tacit to explicit knowledge transfer) (Ibid.). It would seem, based on my theory of academic librarians' social media use, that blogs and wikis are especially useful in supporting these two processes, but become less useful for the sharing of tacit knowledge through socialization (or 'dialogue'). This is a surprising finding, since blogs in particular, according to Casey and Savastinuk (2007), should facilitate this level of dialogue (79-80). On the other hand, my theory suggests that social networks can serve this purpose of socialization for the sharing of tacit knowledge, based on observations in personal and professional use (section 6.1.2). Since SNS have not been implemented for internal use in the studied libraries further research would have to be undertaken to explore this possibility.

6.3.4. *Practical implications*

- Current social media implementations do not support “anytime, anyplace” (ATAP) interactions. In order for them to do so, academic libraries would need to take advantage of existing functionality to develop new tools that increase support for, in particular, “same time, different place” (STDP) interactions. This noted gap in support means that social media in academic libraries do not facilitate synchronous communication between disparate units/departments/branches; the practical significance of this finding must give us pause, since academic libraries organizationally are typically structured around multiple branches and multiple units, as well as—potentially—multiple campuses at the institutional level. One way in which academic libraries could address this gap would be through the implementation of internal social networks; however, any such

implementation would require library administration to acknowledge the three considerations noted above, in section 6.1.4.

- Supporting the principal finding of my substantive theory, Chu et al's (2012) classification of knowledge flows suggests that "one-to-one communication"—or, as I have described it throughout the thesis, two-way conversation or 'dialogue'—is not sufficiently facilitated internally by existing social media implementations. This classification implies that, as above, the most evident method to address the gap is to implement internal social networks.
- Nonaka's knowledge spiral reinforces once again this gap evident in observed implementations using the common parlance of KM. Existing implementations discussed in my study do not support the creation and sharing of *tacit* organizational knowledge at the individual and group levels (i.e., internalization and socialization). The implication for academic libraries is the same; implementing functionality in existing social media, or the introduction of internal social networks to encourage socialization would address this gap in the sharing of tacit organizational knowledge. Once again, success would rely on libraries' careful consideration of the practical advice noted in section 6.1.4.

The next section will address the problematic notion of 'success' in social media implementations, using the lens of Rogers' (1995) innovation diffusion.

6.4. Innovation Diffusion in the Academic Library

A brief discussion of my results in the context of Diffusion of Innovations Theory is worthwhile, since it opens the door to further research in that particular area. The primary conclusion of my substantive theory, re-emphasized in the previous section, is the limited use of social media among academic librarians for the purpose of organizational 'dialogue'. The limited use I have observed can be considered a lack of adoption within the academic libraries, and this lack of adoption can be caused by a number of factors. Rogers (1995) provides four elements of diffusion: (a) the *innovation* itself (i.e., social media, or a specific

social media implementation); (b) *communication channels*, whereby a new idea (i.e., innovation) spreads (e.g., interpersonal channels, mass media channels); (c) *time*, used to measure the rate at which awareness of a new innovation spreads and is (or is not) adopted (or is ultimately rejected); (d) *social system*, or systems that exist in the environment where innovation is introduced. Any of these elements can contribute to the success or failure of an innovation in its support of an intended function.

If the function of “supporting organizational knowledge sharing through dialogue” is my requirement for measuring whether the social media discussed in interviews were successful or not, then I must conclude that they are *unsuccessful*. My theory addresses the reasons *why* they are unsuccessful (section 6.1.2), as does my discussion of it in the context of CoPs (section 6.2). Innovation Diffusion extends that discussion.

Does the problem lie with the *innovation* itself? Blogs and wikis, generally, can support dialogue (Farkas, 2007, 40-46, 76-84). All of the implementations that arose in interviews possessed this functionality, either by allowing user comments or through designated discussion pages (sections 5.2-3). It is possible that these functions are less effective than other existing methods of communication. For example, Alex indicated that he could not find anything on the LIP blog by using the search function, and Beth and Carol both reported that it was easy for important posts to become buried after a few days or weeks (section 5.2.1). Meanwhile Deirdre maintained that the blog did not meet her “need”, but that email and face-to-face interactions did (Ibid.). It may also be because the innovation has been implemented in a very specific way to serve a purpose that does not make full use of its functions. For example, the ‘Online Public Service Manual’ wiki *can* support conversation on discussion pages, but this is not a function that has been promoted to staff (sections 5.3.1 and 5.3.3).

Does the problem lie with *communication* about the innovation? On a number of occasions, participants were simply not aware of the functionality of a given social media implementation. For example, Freddy did not know there were

blogs on Staffnet, even though he had likely referred to meeting minutes documented there (section 5.2.2). In his case, it seems it had not been properly communicated to him that these were blogs. This example also relates to social norms, which I will address below. An example of good communication about an innovation is the ‘Online Public Service Manual’ wiki (section 5.3.1). Karen is always reminded of the wiki because her colleague has conditioned her to check it whenever she has a question (“it’s always in my head that she’s pointing, like this, saying—the manual!”). What has not been communicated to Karen is that the wiki is capable of hosting more than just reference documentation; this has to do with how the innovation has been implemented, as mentioned above.

Does the problem lie with *time*? Time proved to be a key factor in the way participants used social media in every aspect of their lives. For instance, Helen indicated that she did not have time to subscribe to blogs (5.2.5). This sentiment was echoed by many participants. Only a few, such as Gloria and Lee, made time in their professional lives to consistently use social media for dialogue (specifically social networks, e.g., section 5.5.4). In both cases, dialogue did not tend to be with other librarians, but with students or faculty. However, there is a question of whether a lack of time is legitimately to blame for the failure of social media implementations, or rather if it is due to a perception that social media are “a waste of time” (Beth, section 5.5.4). This perception is influenced by the norms and expectations of the social system in which the participants engage.

Does the problem lie with the *social system*? The social norms of an organization dictate how an innovation will be used, and whether or not it will succeed in supporting a given function. In both academic libraries, other methods of communication and knowledge sharing practices existed to support dialogue: instant messaging, email and face-to-face interactions were all more prevalent for this purpose than any of the social media implementations discussed (sections 5.6-8). The use of these other methods was normative, meaning that they matched the organizational culture’s expectations of how dialogue should take place. Many of the social media implementations had become embedded in the expected

knowledge sharing practices of the organization as well, but not for the purpose of dialogue. The LIP blog was normative for the purpose of “knowledge dissemination”, to borrow Chu et al.’s (2012) term (i.e., for the one-way sharing of important announcements and updates, section 5.2.1), and the ‘Online Public Service Manual’ wiki was normative for accessing important operational information about public service processes (section 5.3.1).

The examples supplied in each of these answers suggests that there are barriers to using social media for dialogue, primarily in the way their usage is communicated to staff and in the social norms of the organizational culture. It provides added context to my explanation of findings, breaking down my theory of social media use in academic libraries using the elements provided by Rogers (1995). Further research using Diffusion of Innovations Theory as a theoretical framework could study this phenomenon more deeply, in the way it manifests in these academic libraries and in other organizations as well.

6.4.1. Practical implications

In order for any social media implementation to be successful, it must:

- possess the functionality to support organizational knowledge needs
- be clearly and consistently communicated to all prospective users
- be calculated in expectations around individual and organizational time management, ensuring that an appropriate amount of time for productive use is authorized and supported by library managers
- have the sustained commitment and support of administrators and managers, and must be promoted within the organizational culture in a consistent manner in order to effect social change in existing practices

6.5. Academic Library 2.0

“The shoemaker’s son always goes barefoot.”

The Oxford Dictionary of Proverbs (2009) explains the significance of this saying: “a skilled or knowledgeable person commonly neglects to give his own

family the benefit of his expertise.” It also provides a number of variants equivalent to “the cobbler’s son has no shoes”—a phrase which Freddy used to refer to the state of social media for internal communication. In the context of the academic library, this means that academic librarians are very good at supporting the knowledge needs of library users with their expertise, through instruction, collections development and reference, but that they neglect the knowledge needs of the academic library itself.

Library 2.0 is an example of this axiom. The principles presented by Stephens (2006) and Casey and Savastinuk (2007) prove that librarians are very good at finding new ways to engage library users, to figure out what their knowledge needs are, and to equip them with the skills they need to succeed in the modern world. But what about the librarian? What about the librarian’s knowledge needs?

Xu et al.’s model for Academic Library 2.0 (2009, 330; Figure 2.3) proposes an interpretation of knowledge sharing that is not focused externally, but rather in all directions (i.e., “N-ways”). My theory of social media use contributes to this rhizomatic view of knowledge sharing by identifying the continued presence of this lack in the KM practices of academic libraries, despite the introduction of Web 2.0 technologies. Organizational knowledge sharing in academic libraries underserves the academic librarian by failing to support dialogue and the sharing of tacit knowledge through the use of Web 2.0. My model for the social construction of the academic librarian underlines the need for a more nuanced understanding of the communities the academic librarian participates in, in order to determine his own knowledge needs.

6.5.1. Practical implications

The academic library should be conscious of the needs of its *internal* users (i.e., librarians, support staff, organizational partners) as much as that of its *external* users (i.e., students, faculty, members of the public). Assessment plays a crucial role in ensuring that the knowledge of librarians and of the library is best

served. The collection of statistics (i.e., site hits, clickstream data, download counts, number and type of reference transactions, number of emails received, etc.) as well as informed opinions around communication practices can help library administrators make decisions about how to improve organizational knowledge sharing. Use of social media can also be helpful in this process of assessment, provided it can support dialogue. Before this can take place, managers and administrators must adopt a rhizomatic view of knowledge sharing; poor knowledge sharing practices among staff will ultimately result in poor service.

6.6. Summary

This chapter began by describing the substantive theory on knowledge sharing that has emerged from my study of social media use in academic libraries. My theory distinguished three major outcomes: (a) a theoretical framework for the study social media for knowledge sharing in academic libraries, comprised of six fundamental conceptual relationships; (b) the theory itself, in the form of a “theoretical explanation” for the study results; (c) an unexpected outcome in the form of a model for the social construction of the academic librarian. I then described the practical significance of my theory, before studying it through the lens of existing discourses. In the second half of the chapter, I began by re-framing my findings in the context of communities of practice; this was an essential part of my research, as it figures explicitly in my third research question (section 1.2). Communities of practice were also relevant to my model for the social construction of the academic librarian. The chief finding of this section was that organizational communities of practice were present in the studied academic libraries, but were only facilitated in a limited way by social media implementations. I then discussed my theory in the context of the three classifications of knowledge sharing introduced in Chapter Two (section 2.9). The primary implication of this discussion was that it reinforced what my findings had already revealed: the sharing of tacit organizational knowledge was not supported by social media implementations. Discussion then turned to Diffusion of Innovations Theory, and what it might add to my interpretation of results. This

theoretical framework proved compatible with my own, supporting once more the explanation supplied by my theory, while contextualizing it using the four elements of diffusion. Finally, I concluded my discussion of results with a return to the concept of Academic Library 2.0 introduced at the start of my thesis (section 2.5), and applying the lessons learned in this research to that concept. My theory supports an “N-ways” (or rhizomatic) view of the academic library’s knowledge sharing practices, and identifies the ways in which existing practices in the organizational use of social media fall short.

The framework for the study of social media in knowledge sharing that I have achieved as part of my substantive theory has produced results that can be directly applied and discussed within a broader conversation about communities of practice, innovation diffusion, Academic Library 2.0 and knowledge management.

CHAPTER SEVEN: CONCLUSIONS

7.1. Answers?

As the primary outcome of the thesis, my emergent substantive theory of social media use needs to succeed at one thing, if nothing else: that is to answer the research questions I set out with when I undertook my research. The discussion of results in Chapter Six (“Discussion”) provides comprehensive answers, first by presenting my theory as a “theoretical explanation” (Bryant & Charmaz, 2010, 610) of how the process of knowledge sharing using social media in academic libraries takes place, and then by extending its application to existing theoretical discourses, namely that of “communities of practice”. I now introduce my concluding chapter with a summary of these answers, in direct conversation with the questions themselves:

How are social media (in particular: blogs, wikis and social networks) being used in academic libraries for organizational communication and knowledge sharing? What functions do they/can they support in this environment?

Social media have become integrated in the knowledge sharing practices of academic libraries. Blogs and wikis support internal knowledge sharing in the form of important announcements, news and information for librarians and staff. They are also used for documenting resources and processes within the organization, and as a reference tool for retrieving documented knowledge. Social networks are used to communicate and to disseminate information about the library with library users; occasionally they also acquire feedback from library users that can improve library services. Social media also have other functions that are capable of supporting the sharing of tacit knowledge and sustaining communities of practitioners; however, these functions are under-utilized. Interviews revealed that participants were either unfamiliar with these functions, or were unsure how to make effective use of these functions within the existing organizational culture.

How do academic librarians perceive and use social media? What are the prevailing attitudes toward such technologies?

Academic librarians' perceptions and use of social media are interrelated with their individual social construction. Perception and use varied greatly based on the context of use; most participants actively used social media in their personal lives, but were more reluctant to use them in professional and especially organizational contexts for dialogue, or the sharing of tacit knowledge. While some participants expressed a dissatisfaction with current knowledge sharing practices, and sometimes wished for a more accepted use of social media functions that supported dialogue, prevailing attitudes toward social media indicated that it should be used primarily for the documentation and dissemination of explicit knowledge.

From a knowledge management perspective, do social media currently represent/create/facilitate communities of practice in academic libraries? Could they in the future, and if so, how?

In the manner that they are currently being implemented, social media cannot support online communities of practice (CoPs) within the studied academic libraries. In limited ways, the current implementations of social media facilitate existing CoPs through sharing and dissemination of explicit knowledge in the form of announcements, news and updates, and through documentation. Social media could be more useful in supporting CoPs in the future if they were used to their full potential.

7.2. Emergent Theory Revisited

In answering my research questions based on my interpretation of study results, it is crucial to note that they do not represent the end of the research process. Indeed, while the research goals I set out with have been demonstrably achieved and my study is at an end, the answers summarized above pose new, important questions about academic libraries, organizational knowledge sharing practices and the role of social media. In this way, my research has opened up new vistas to explore; it is my hope that the framework I have generated can be

used, adapted and improved through future work, that my substantive theory will prove an important contribution to the fields of knowledge management (KM) and LIS, and that, perhaps in time, through further collection of data and analysis, it can be developed into a formal theory on the sharing of organizational knowledge.

Later in this chapter, I will provide a summary of the potential for future work that my research has presented.

7.3. Limitations

There are several limitations of this study that must be identified, so that future researchers can confirm, refute or extend its conclusions. One important limitation was my prior relationship to both libraries. During the period of interviews, I was a staff member at the Grant MacEwan University Library and I was a student at the University of Alberta. As a result, some of the participants were known to me, and I was already familiar with some of the organizational practices present in both organizations. These pre-existing relationships presented the potential to influence the design, application and analysis of my interviews. In order to counteract this risk, I employed interview guides consistently as a strategy to avoid any assumptions based on prior knowledge, and identified any interactions or leading follow-up questions that compromised participants' answers during the process of analysis. In the latter case, the iterative coding process facilitated this task. Needless to say, I also received approval from research ethics boards at both institutions confirming that there were no conflicts of interest evident in my pre-existing relationships (Appendix One, "Ethics Documentation").

Another limitation of this study was the lag between phases of data collection and analysis. Data collection was spread out over a period of sixteen months, subject to the unavoidable delays of course work, project work and lack of funding and resources that come naturally with being a student researcher. Qualitative analysis in the form of detailed, line-by-line coding extended that period another four months. This meant that changes in organizational practices

since the first set of interviews might have been missed in the analysis. My phased approach (Figure 3.1) addressed this limitation by including an additional participant from Grant MacEwan in the third phase, which allowed me to determine if any significant organizational changes had taken place since the first interviews nearly a year before. Similarly, the Cameron Library interviews alerted me to system-wide changes at the University of Alberta that had taken place in the eight months between them and the Rutherford interviews. At the stage of analysis, I determined that observed changes were not significant enough to warrant follow-up interviews—a potentiality I had considered to address this limitation of my research design.

It could also be said that my thesis suffers from what project managers refer to as ‘scope creep’. The limitation evident in academic ‘scope creep’ is that a researcher who identifies an interesting avenue of inquiry that is not defined within the current research design might lose sight of his original purpose in pursuing this new lead. In some ways, I deliberately kept the scope of my research broad; my literature review in Chapter Two employed what I familiarly describe as the ‘kitchen sink’ approach, and my discussion of findings in Chapter Six (“Discussion”) applied my findings to not one or two but several related knowledge domains. In other cases, it was not so much deliberate as it was a result of the built-in flexibility of my analytical approach; my use of Grounded Theory (GT) and the application of reflexive strategies expanded the scope of my original questions to include surprising outcomes, such as my model for the social construction of the academic librarian (section 6.1.3). This approach also led to the inclusion of my autoethnographic study of journal notes in Chapter Four (“Coding Process”); that part of the thesis, while adding a valuable dimension to my work, temporarily re-orientes the focus of my research with an inward (rather than an outward) gaze. The interdisciplinary nature of my graduate program in the digital humanities and library and information studies, and the need to develop a thesis that effectively bridges the two academic fields, is partial justification for the unwinding sprawl of this thesis. As explained in Chapter Four (“Coding Process”), I minimized the effects of academic ‘scope creep’ by always returning

to my three research questions, and ensuring that the construction of interviews and the analysis always directly related back to answering that initial purpose (i.e., ‘relevance’, section 4.2). I also continually reminded myself of the ultimate outcome I aimed to achieve through my analysis, in the form of an emergent substantive theory. Figures 7.1 and 7.2 are merely the most obvious examples of how I constantly kept my ‘eyes on the prize’. Future interviews and surveys that might focus on a specific outcome of my research (e.g., “why are academic libraries not using social networks for internal communication?”) would be a valuable contribution that could continue my research while once more narrowing the scope of inquiry.

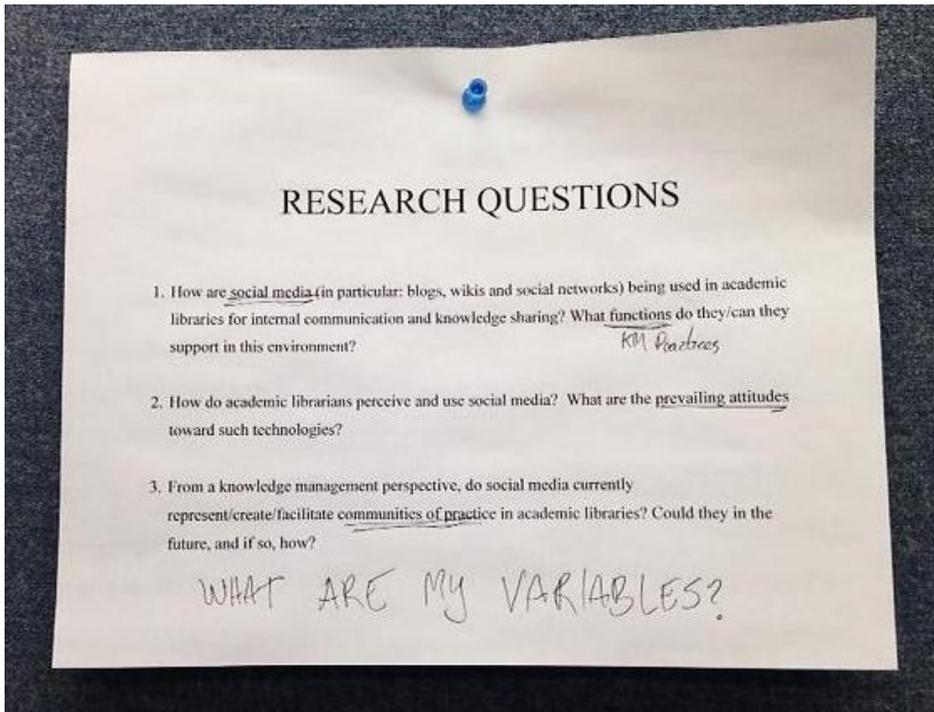


Figure 7.1: A copy of my research questions, with notes for emphasis, hung above my desk. This reminded me of my research goals.

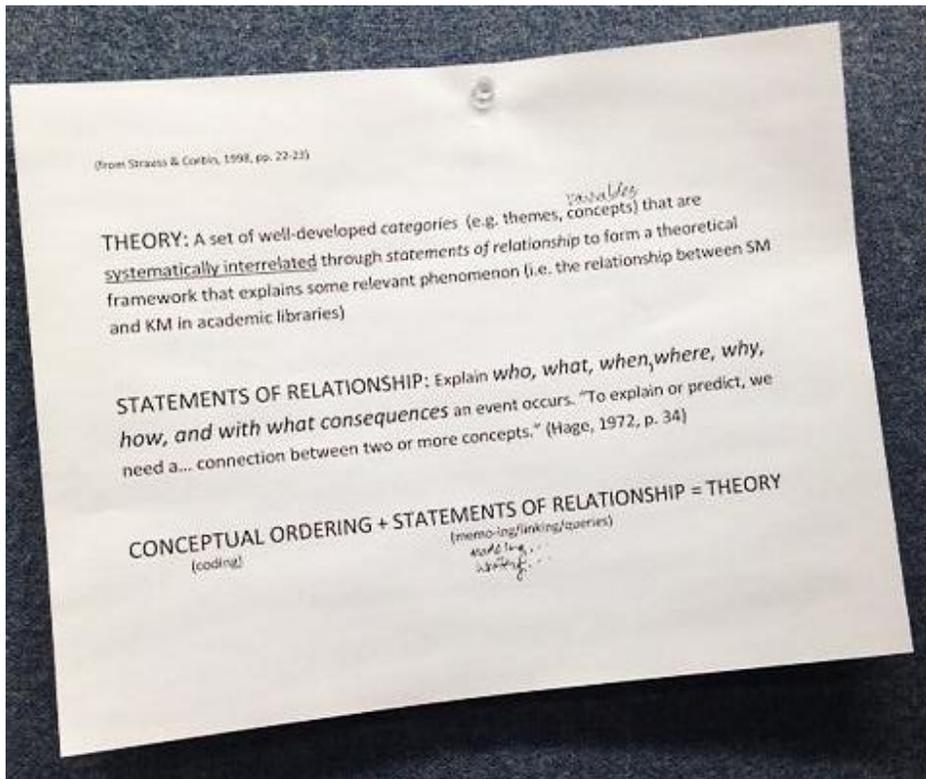


Figure 7.2: A definition for the process of developing a substantive grounded theory through qualitative analysis, hung above my desk. This reminded me of the anticipated outcome of my research.

7.4. Future Research

7.4.1. 'Non-Limitations'

Before proposing potential avenues for future research, I would like to take into consideration what I have termed 'non-limitations'. 'Non-limitations' are specific decisions taken in the design of my research that have proven effective in addressing the demands of this project and as ways of managing the scope of the research, but that identify methodological and theoretical areas where future research could most obviously expand on the current study's findings. Distinguishing these decisions from the limitations in the previous section is important, since they represent the greatest strengths, rather than the weaknesses,

of the current research, and are only ‘limiting’ in a speculative sense (i.e., they provide necessary boundaries to the scope of my research).

First and most significantly, my research has adopted a purely qualitative methodological approach. This decision was appropriate, given the goal of my study to explore a “basic social process” that is poorly understood in existing research (Charmaz 2006, 20). As a method of inquiry, qualitative research is effective at supplying highly specific, in-depth answers to the *why* and *how* of a given problem. However, future research could incorporate mixed methods to extend study on the role of social media in the knowledge sharing practices of academic libraries and other organizations, in order to increase the transferability and generalizability of results. For example, would university or college libraries in other regions or countries share the same perceptions and practices as those found in my research? Future studies could explore such variations by surveying participants from additional study sites.

Another non-limitation of this study is the sample size. As previously discussed (sections 3.5 and 3.8), the concept of “theoretical saturation” is a perennial concern in qualitative research. My own review of the literature on saturation and sample size leads me to believe that there are, in fact, no firm rules for achieving saturation in a qualitative study, despite numerous attempts by researchers to assign such prescriptions (e.g., Bertaux, 1981, 35; Morse, 1994, 225; Guest et al., 2006, 61-62; Mason, 2010; Creswell, 2007, 126-128). Indeed, it has been one of the more perplexing methodological problems faced in undertaking this research, and one that has consumed a great deal of time and energy in resolving (often generating lively debates with my committee). It is my intention that, while identifying this as a *non-limitation* of my study (i.e., an important but not all-consuming consideration in research design), new qualitative researchers will take my example and not be discouraged when they inevitably encounter this hurdle in the design of their own research. Relevance to the research problem and the scope that it proposes, as discussed in Chapter Four (“Coding Process”), is ultimately what should determine the measure of

theoretical saturation. My study used fourteen (N=14) participants for in-depth, semi-structured interviews, which were sufficient in achieving theoretical saturation for the development of broad conceptual categories that defined social media use in two academic library environments. As indicated in section 3.9, I estimate that saturation could likely have been achieved with eight participants, since the six major conceptual categories had been established and no significant changes to the codebook took place after that point. I did observe some variation between study sites through my strategic application of maximum variation and theoretical sampling and in the qualitative coding of interview transcripts, which suggests that there is the potential for the development of new concepts and categories; indeed, my framework for the study of social media use is constructed in such a way that makes it extensible to the discovery and inclusion of new conceptual categories that could reveal new themes (section 6.1.1). The development of new concepts and categories would be possible if the scope of the research were broadened in future studies to include additional academic libraries or other types of organizations (e.g., non-profit organizations), and if the focus were expanded to include other media for knowledge sharing besides social media.

The social constructionist paradigm adopted in my methodology reflects a specific ideological perspective on the nature of knowledge and the interpretation of empirical evidence. As Bryant and Charmaz (2010) aptly put it, “we are not automatons, taking in data and then somehow processing it” (15); the researcher is, himself, a participant when he conducts research, whether this is something he is conscious of or not. The application of this paradigm is certainly a strength of the research, and, as such, is characterized as a ‘non-limitation’. Those persuaded by a more positivistic view may struggle to appreciate the significance of my findings, which are—at the risk of being redundant—‘emergent’ and ‘theoretical’. It is worth clarifying to avoid any confusion on this point that my research does not claim to offer objective truths; rather it has produced a working and transferable framework for the study of a social process and a theoretical explanation of that process based on the empirical and inductive analysis of

qualitative data. The verification of my findings through the collection of quantitative data would satisfy the objectivist perspective, and as indicated above, this lies outside the scope of the current study.

7.4.2. Potential Next Steps

Throughout Chapter Six (“Discussion”) and in the “Non-Limitations” section above, I have made sure to highlight the likeliest avenues for future research. There are some basic ‘next steps’ to expand this research that seem evident:

- Expand on this study’s sample by interviewing participants at other sites (i.e., academic libraries and other organizations);
- employ mixed methods for data collection and analysis (e.g., surveys/questionnaires, structured and unstructured interviews, collection of user statistics from social media implementations, content analysis of existing social media implementations);
- conduct follow-up interviews with the current sample as a longitudinal study, to measure the change in social media use and knowledge sharing practices over time.

It is also important to keep in mind some of the questions that emerge from my findings, as any of these could spin off into a new research topic:

- What is ‘community’ and how is it manifested in organizational implementations of social media? How do members distinguish organizational communities from professional or personal ones?
- What role can social media play in the delivery of formal and informal training, as essential components of knowledge management?
- Can social media facilitate the sharing of organizational knowledge, in particular tacit knowledge, between physically disparate units or branches? If so, what are the conditions necessary for it to take place?

- How do users' perceptions of 'privacy', 'confidentiality' and 'discretion' affect the way in which academic libraries and organizations implement social media? How do they affect the way users use them?

My engagement with other frameworks from related research areas also presents some very interesting options to pursue in future work:

- The presence of internal communities of practice (CoPs) in academic libraries offers a unique opportunity. A study directed at examining the formation of relationships within these internal CoPs would prove valuable in identifying exactly how they are constructed, how they affect members' identities, and how social media and other knowledge sharing media can support them and their practices.
- The creation of my model for the social construction of the academic librarian seems a good fit to the study of academic librarians' CoPs more generally. A targeted study applying the principles of CoP as defined by Wenger (1998) would permit an in-depth exploration of the CoPs that exist around academic libraries, and how academic librarians socially construct their professional identities through these communities. Such a study could confirm the validity of my model in the context of CoP.
- In the KM context within which Nonaka (1994) is found, a study exploring the potential of social networks (or SNS) to facilitate the sharing of tacit knowledge for the purpose of socialization in organizations could prove extremely valuable. Research with this particular question in mind could examine what role SNS might play in developing new knowledge sharing practices in academic libraries (and in other organizations).
- The data collected in this study is incredibly rich. While the collection of additional data might improve the quality and overall authority of results, it is important not to close off the option of re-evaluating the current data through a different lens. Rogers' (1995) Diffusion of Innovations Theory presents an ideal theoretical lens to further examine my data; the discussion around it in section 6.4 suggests that innovation diffusion

would allow a deeper phenomenological exploration of the barriers that exist to using social media for dialogue.

Finally, Chapter Four (“Coding Process”), as a distinct study on method, presents some tantalizing paths for future research:

- Through the use of computer-assisted qualitative data analysis software (CAQDAS), knowledge is organized into conceptual categories and concepts on the basis of an ontological-relational model: is it possible to extract that framework as a relational database, reuse the structure and, even, expand upon it within an online scholarly community? Would there be a benefit, if so? Who would it benefit, and how?
- Does thinking about the organization and analysis of qualitative data as an “ontology” transform the way we interpret the data? If so, how? Might it be possible to explore this possibility through the use of reflexive methodology and by observing other researchers conducting similar qualitative studies?

There are surely more avenues for future research. However, those listed above are the ones I am currently most engaged with and interested in pursuing. There remains a great deal more to learn about social media use, organizational knowledge sharing, and academic libraries/librarians, not to mention increasing transparency in qualitative methodologies for the benefit of the research community, and I hope to continue to contribute my insights through future work.

7.5. Dénouement

When we consider the web as “a vast network of exchanges”—a phrase I used in the introduction of my thesis—and social media as the instantiation of that network, we sometimes lose sight of the fact that technology is only useful so long as it has *users*. This entire study has focused on the *use* of social media for knowledge sharing in academic libraries, and time and time again, has returned to the *users* (i.e., the people sharing knowledge); it is, after all, the *users* who generated the data for the study’s results. I state these facts to remind the reader

that, despite my focus on a particular set of innovations (i.e., social media) and the comprehensive discussion about them and their implementation over the last 200 pages, these innovations are still just *tools*. As Jono Bacon (2009) puts it in *The Art of Community*, social media are “genuinely valuable tools”, but still only useful so long as they meet the needs of their users. This is an important lesson learned from the results of my research, and it is important for academic libraries to mark it as well. In order to effectively implement social media for organizational knowledge sharing, the academic library needs to reflect on the role these tools *can* and *should* play in how people access and share information, as well as how they fit with the existing practices and values of its librarians, staff and stakeholders. The academic library must also determine when existing practices are no longer effective for organizational knowledge sharing, and be prepared to effect change by implementing new ways for its users and communities to share knowledge. Social media are tools that can help with this—provided the academic library does not lose sight of its *users*.

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APPENDIX ONE: ETHICS DOCUMENTATION

This appendix contains:

- Summary of compliance with ethics procedure (A1.1);
- Copy of consent form (A1.2);
- Copy of information letter (A.1.3).

A1.1. Summary

Given that this research began as course-based “pilot” studies in the early phases of data collection, it has been reviewed for ethics approval three times by the University of Alberta Research Ethics Board (REB) One. For reference, the application IDs for each of these are as follows:

Table A1.1. *University of Alberta Research Ethics Applications.*

ID	Title	Admin Status
Pro00020907	The use of social media for knowledge management in academic libraries	Course-based (LIS 599: <i>Social media in KM</i>)
Pro00024750	The use of social media for knowledge management in Rutherford library	Course-based (LIS 597: <i>Advanced research methods</i>)
Pro00028788	The use of social media for internal knowledge sharing in academic libraries	Thesis-based

All three followed the same template and procedures, and only differed significantly in the administrative capacity of being either “course-based” (i.e., part of a course for which I was graded and received course credit) or “thesis-based” (which could only be submitted once my thesis proposal was completed and under review pending approval by the thesis committee). Pro00028788

included references to the previous applications, as well as information on recruitment that had taken place under the approval of previous applications, and folded them into the design of the thesis project.

Grant MacEwan Research Ethics Board (REB) approved my application for “The use of social media for knowledge management in academic libraries” on March 18, 2011. This application included a full copy of Pro00020907 already approved by University of Alberta REB. A modification application including a full copy of Pro00028788 already approved by the University of Alberta REB, as well as new timelines for data collection, were approved by the Grant MacEwan REB on March 1, 2012. All data collection associated with the study was completed before the expiration of REB approval in 2013 (January 31, 2013 for University of Alberta REB, and March 18, 2013 for Grant MacEwan REB).

The consent form in A1.2 is a copy of the same form used with all participants throughout the study. The information letter in A1.3 is a copy of the information letter shared with Cameron librarians in the third phase of recruitment; all information letters described the study in the same way with only minor differences (e.g., date ranges for recruitment, names of study sites).

LETTER OF CONSENT

The use of social media for knowledge management in academic libraries

PARTICIPANT CONSENT FORM

I have read the letter of information and have had any questions regarding the purpose and nature of this study, how research findings from this study will be used, and my rights as a participant in this study answered to my satisfaction. I understand the basic rationale as well as the procedures of this study as explained to me by the researcher.

I understand that the following measures will be taken to ensure confidentiality:

- My name will be replaced with a pseudonym during the subsequent process of transcription.
- Any quotations taken from my interview and used by the researcher in publications will be anonymized.
- Data resulting from this interview will be safeguarded a minimum of five years and destroyed in a way that ensures my privacy and conforms to the standards of the Tri-Council Policy Statement.

I understand that indirect identifiers, including my place of employment, age and generalized job description, will be retained and may result in identification.

I understand that I may withdraw from this study at any time during the interview, for any reason. I can withdraw from the study at any time within two weeks following the date of the interview, identified below. I understand that after that point I can no longer withdraw my data from the study. I also have the right to disclose any perceived or actual conflict of interest with regards to my participation in this study.

I hereby give my permission to be interviewed. I understand that the interview will be digitally recorded and that the recording, interview transcripts, and field notes will only be used for educational and research purposes (e.g. thesis work, publications, conference papers, workshops, seminars, talks, etc).

Participant's Signature:

Researcher's Signature:

Date:

Two copies of this form have been provided, one to be signed and returned to the researcher, and one to be kept by the participant for his or her own records.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by Research Ethics Board One at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 492-2615.

LETTER OF INFORMATION

The use of social media for knowledge management in academic libraries

Subjects Needed for Study of Current Knowledge Management (KM) practices within academic libraries.

Participants are needed for a study of current knowledge management (KM) practices within the University of Alberta (UA) Libraries and Grant MacEwan University Library, and the role of social media in internal communication. Participants will be interviewed on-campus between **April 1, 2012 and November 30, 2012**, at a time and location to be determined. The intent is that these interviews will provide a comprehensive map of the KM needs of academic libraries, and examine the effectiveness of existing practices involving web-based social media in fulfilling these needs. Conclusions drawn from findings will explore how technologies such as blogs and wikis are being used and can be used to facilitate KM in academic libraries. Interviews will vary in length based on the participant's answers to interview questions, up to a maximum of 90 minutes. Interviews will be exploratory, meaning that the researcher may ask follow-up questions based on the participant's answers, in order to thoroughly capture the participant's thoughts related to KM practices and technologies in the context of their organization. As indicated below and in the attached letter of consent, participants are under no obligation to answer a specific question if they feel uncomfortable answering it. This method of conducting interviews will provide a rich data set for qualitative analysis.

Participation in this study is completely voluntary. Participants may decline to answer specific questions and/or withdraw from the study at any time during the interview. The interview will be recorded to assist with information-gathering and transcription. The full recording will not be publicly released. Participants will be assigned pseudonyms for any publication resulting from the study, to ensure anonymity and confidentiality. Participants will have two weeks following the date of the interview to contact the researcher if they wish to remove themselves from the study. All data will be handled in compliance of the standards laid out by the Tri-Council Policy Statement. Risks associated with the study are limited to mild fatigue at being interviewed and possible anxiety from the experience of being audio-recorded. These risks are considered minimal (i.e., no greater than those encountered in everyday life).

The researcher is a MA/MLIS student in the School of Library and Information Studies at the University of Alberta. Ethics approval for this study has been granted by University of Alberta Research Ethics Board One and Grant MacEwan University Research Ethics Board. The researcher's supervisor is Dr. Dinesh Rathi. The completed study will be used primarily for the researcher's MA thesis, and may be used for additional educational and research purposes (e.g. publications, conference papers, workshops, seminars, talks, etc). Participation in this study will contribute valuable information about current KM practices in academic libraries, the potential of web-based social media technologies for KM, and the role of social media in academic

libraries. This data will inform approaches in future studies about the existing and potential roles of social media in creating, disseminating and utilizing knowledge in library organizations.

For more information, please contact:

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APPENDIX TWO: INTERVIEW GUIDES

This appendix contains:

- Summary of interview guides contents (A2.1);
- Interview Guide 1 (Grant MacEwan, Phase 1) (A2.2);
- Interview Guide 2 (University of Alberta, Phase 2 and 3) (A2.3);
- Modified Interview Guide (Grant MacEwan, Jackie) (A2.4).

A2.1. Summary

As described in section 3.7, there were two interview guides used over the course of this study. The first was used with Grant MacEwan University librarians and staff (Alex, Beth, Carol, Deirdre and Elaine). The second was used with all University of Alberta Libraries participants (Freddy, Gloria, Helen, Ivonne, Karen, Lee, Max and Nancy). The copy provided in section A2.3 applies to Cameron library, but the only distinction between it and the version used with the Rutherford participants is the name of the library branch. The interview with Jackie followed the original interview guide, ensuring that all questions about the Grant MacEwan Library Intranet Portal (LIP) were covered consistently, but was more loosely structured around follow-up questions as characteristic of the second interview guide, and included an expanded treatment of social media beyond the LIP implementation.

INTERVIEW QUESTIONS (*SAMPLE*)

Questions for Grant MacEwan University Reference Staff about the Library Intranet Portal (LIP)

(45 questions—estimated length: 45-90 minutes)

Personal information (note that this information will only be used to generalize results across studied population.)

- What is your role at Grant MacEwan Library?
- How long have been working in this role?
- Describe for me some of the day-to-day tasks involved in your work.
- Can you tell me your age?

Communities of Practice

A “community of practice” is defined as “an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their community.”

- Does such a system exist within the Library to facilitate interactions between staff? Explain.
- (*only if previous question was answered in the affirmative*) The assumption behind “communities of practice” is that less experienced members of the community learn from social interactions with more experienced members and experts of a specific knowledge domain. From your experience with the system (or CoP) that exists within the Library, do you find that to be the case?
- How else does learning take place internally, within the Library?

Modes of communication

- What are the different modes of communication that you use in your role?

- How many of your interactions, would you say, take place online—via email, chat, or other online communication tools—compared to face-to-face? By phone?
- Other online communication tools might include blogs, wikis, message boards or web forums, available on the intranet and the internet. How many of your interactions take place using such tools, compared to email or chat?
- What is your preferred mode of communication? Why?
- Do you find this mode of communication more effective than others? How so?

LIP & Social Media

- Describe for me, in your own words, the Library Intranet Portal (LIP).
- Do you personally use LIP? If so, describe for me an example of how you have used LIP in the past.
- Have you ever created a post on LIP? Why/what was it about?
- Have you ever replied to a post on LIP?
- Has a topic posted on LIP ever sparked a face-to-face conversation or debate among your peers? If possible, describe an instance of this.
- Do you find you more often create posts or reply to posts? Why do you believe that is?
- Have you ever thought about the way LIP is structured? Do you think there is a better model for sharing the kind of information you need at the reference desk?
- Do you think of LIP more as a place to connect and communicate with your peers, or as a place to access current information about the reference desk?
- Have you ever read a post by a co-worker on LIP about something you were not aware of, and that subsequently helped you with a question or questions at the reference desk? If so, describe.
- Have you ever learned something in the course of your work at the reference desk, and subsequently posted it on LIP to share with your co-workers? If so, describe.
- Has content on LIP encouraged you to try new approaches to reference work (e.g., a different way to perform a search)? If so, describe.

- Do you think of LIP as a tool to collect statistics about the reference desk?
- Do you think LIP could help facilitate assessment?
- What other tools for knowledge sharing do you use in your work at the library (e.g. email)? *(Note that this question is very similar to a question previously asked about modes of communication—map any variations due to the use of the term “knowledge sharing”)*
- What technologies besides LIP have you used in the past to find out or provide information critical to your work at the reference desk?
- How does LIP compare to previous or existing tools and technologies used in this manner?
- What is your preferred method for communicating information with your co-workers? List the different methods you can think of (some of which we have likely just discussed) in your order of preference.
- What is your preferred method for seeking information about day-to-day updates and changes at the reference desk? List the different methods you can think of (some of which we have likely just discussed) in your order of preference.
- Describe the feature of LIP you find least effective (something you would like to see changed). If possible, provide an example of when you have used this feature.
- Describe the feature of LIP that you find most effective (something that you think works well). If possible, provide an example of when you have used this feature.
- Do you believe LIP is effective as a collaborative tool? Explain.
- Do you believe LIP is effective as an information management tool? Explain.
- Do you believe LIP could/should be considered as an online community of practice? Explain.
- Do you use online social media (such as blogs, wikis, social bookmarking and social tagging tools, social networks, microblogs such as Twitter, etc) outside the context of your work? If so, how do you use them?
- How important are these technologies in the way you create, access, and communicate information on a daily basis?

LIP as an innovation

Based on Rogers' Innovation Diffusion theory

- What did the Library use for internal communication and knowledge-sharing before LIP?
- Is LIP better than these other methods?
- Do you think LIP effectively answers the needs of its users? In your opinion, what are those needs?
- Do you think LIP matches the values and goals of the Library? Explain/how so?
- In general, do you find LIP difficult or easy to use?
- How has LIP benefited you in your role?
- How has LIP benefited the Library?

INTERVIEW QUESTIONS (*SAMPLE*)¹

Questions for Cameron Library Reference Staff about the Intranet and Social Media Use

(estimated length: 45-90 minutes)

Personal information (note that this information will only be used to generalize results across studied population.)

- What is your role at Cameron Library?
- How long have been working in this role?
- Describe for me some of the day-to-day tasks involved in your work.
- Can you tell me your age?

Communities of Practice

A “community of practice” is defined as “an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their community.”

- Does such a system exist within the Library² to facilitate interactions between staff? Explain.
- (*only if previous question was answered in the affirmative*) The assumption behind “communities of practice” is that less experienced members of the community learn from social interactions with more experienced members and experts of a specific

¹ Interviews are exploratory, and intended to be conversational in nature. These questions represent the basic script the researcher will follow in interviews. This list of questions is not exhaustive, and questions will vary based on the participant’s answers. The script represents five key sections relevant to the researcher’s investigation, highlighted in bold.

² A number of questions ask about the participant’s thoughts of the ‘Library’, and are phrased in a deliberately generic way. The researcher is interested both in the library at the narrowest context, i.e., Cameron library, or the Cameron library reference desk, and at the broadest context, i.e., UA Libraries, the entire system within the institution. The researcher can provide a more specific context at his discretion, either in follow-up questions or if asked for clarification.

knowledge domain. From your experience with the system (or CoP) that exists within the Library, do you find that to be the case?

- How else does learning take place internally, within the Library?

Modes of communication

- What are the different modes of communication that you use in your role?
- How many of your interactions, would you say, take place online—via email, chat, or other online communication tools—compared to face-to-face? By phone?
- Other online communication tools might include blogs, wikis, message boards or web forums, available on the intranet and the internet. How many of your interactions take place using such tools, compared to email or chat?
- What is your preferred mode of communication? Why?
- Do you find this mode of communication more effective than others? How so?

Social Media

- Do you use online social media (such as blogs, wikis, social bookmarking and social tagging tools, social networks, microblogs such as Twitter, etc) outside the context of your work? If so, how do you use them?
- How important are these technologies in the way you create, access, and communicate information on a daily basis?
- Does your library use an intranet? If so, can you describe it to me?
- Does the intranet have any interactive features, such as blogs, wikis, forums or chat? If so, do you use these? Can you give me examples of how you have used these?
- What is your preferred method for communicating information with your co-workers? List the different methods you can think of (some of which we have likely just discussed) in your order of preference.

- What is your preferred method for seeking information about day-to-day updates and changes at the reference desk? List the different methods you can think of (some of which we have likely just discussed) in your order of preference.
- Have you ever thought about the way the intranet is structured? Do you think there is a better model for sharing the kind of information you need at the reference desk/in your work at the Library?
- Do you think of the intranet more as a place to connect and communicate with your peers, or as a place to access current information about the reference desk/for your work?
- Do you think of the intranet as a tool to collect statistics about the reference desk?
- Do you think the intranet could help facilitate assessment?
- What other tools for knowledge sharing do you use in your work at the library (e.g., email)? (*Note that this question is very similar to a question previously asked about modes of communication—map any variations due to the use of the term “knowledge sharing”*)
- What technologies besides the intranet have you used in the past to find out or provide information critical to your work?

Potential follow-up questions³:

(blogs and wikis—for wiki substitute “post” for “entry”)

- Have you ever created a post? Why/what was it about?
- Have you ever commented on/replied to a post?
- Has a topic posted ever sparked a face-to-face conversation or debate among your peers? If possible, describe an instance of this.

³ A list of possible follow-up questions are supplied here, in the event that either internal blogs or wikis are used by the participants, in the course of their work. The researcher will also press for any use of other social media tools, from project management and collaborative software to social networking and tagging that might be used either on the library intranet or on the Web. If other tools such as these are used, the researcher will ask appropriate follow-up questions about the participant’s use of them, along the same lines as the supplied follow-up questions for blogs and wikis.

- Do you find you more often create posts or reply to/comment on posts? Why do you believe that is?
- Have you ever read a post by a co-worker about something you were not aware of, and that subsequently helped you with a question or questions at the reference desk? If so, describe.
- Have you ever learned something in the course of your work at the reference desk, and subsequently posted it to share with your co-workers? If so, describe.
- Has content on a blog or wiki encouraged you to try new approaches to reference work (e.g., a different way to perform a search)? If so, describe.
- Describe the feature of [innovation] you find least effective (something you would like to see changed). If possible, provide an example of when you have used this feature.
- Describe the feature of [innovation] that you find most effective (something that you think works well). If possible, provide an example of when you have used this feature.
- Do you believe [innovation] is effective as a collaborative tool? Explain.
- Do you believe [innovation] is effective as an information management tool? Explain.
- Do you believe [innovation] could/should be considered as an online community of practice? Explain.
- How does [innovation] compare to previous or existing tools and technologies used to share information?

The intranet and social media as innovation

Based on Rogers' Innovation Diffusion theory

- What has the Library used for internal communication and knowledge-sharing in the past?
- How do these other methods compare to current methods?
- Do you think the intranet [or any social media tools discussed in the previous section] effectively answers the needs of its users? In your opinion, what are those needs?

- Do you think the intranet [or any social media tools discussed in the previous section] matches the values and goals of the Library? Explain/how so?
- In general, do you find the intranet [or any social media tools discussed in the previous section] difficult or easy to use?
- How has the intranet [or any social media tools discussed in the previous section] benefited you in your role?
- How has the intranet [or any social media tools discussed in the previous section] benefited the Library?

INTERVIEW QUESTIONS (*SAMPLE*)

Questions for Grant MacEwan University Reference Staff about social media use

(45 questions—estimated length: 45-90 minutes)

Personal information (note that this information will only be used to generalize results across studied population.)

- What is your role at Grant MacEwan Library?
- How long have been working in this role?
- Describe for me some of the day-to-day tasks involved in your work.
- Can you tell me your age?

Communities of Practice

A “community of practice” is defined as “an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their community.”

- Does such a system exist within the Library to facilitate interactions between staff? Explain.
- (*only if previous question was answered in the affirmative*) The assumption behind “communities of practice” is that less experienced members of the community learn from social interactions with more experienced members and experts of a specific knowledge domain. From your experience with the system (or CoP) that exists within the Library, do you find that to be the case?
- How else does learning take place internally, within the Library?

Modes of communication

- What are the different modes of communication that you use in your role?
- How many of your interactions, would you say, take place online—via email, chat, or other online communication tools—compared to face-to-face? By phone?
- Other online communication tools might include blogs, wikis, message boards or web forums, available on the intranet and the internet. How many of your interactions take place using such tools, compared to email or chat?
- What is your preferred mode of communication? Why?
- Do you find this mode of communication more effective than others? How so?

Social Media

- What tools for knowledge sharing do you use in your work at the library (e.g., email)? *(Note that this question is very similar to a question previously asked about modes of communication—map any variations due to the use of the term “knowledge sharing”)*
- What is your preferred method for seeking information about day-to-day updates and changes at the reference desk? List the different methods you can think of (some of which we have likely just discussed) in your order of preference.
- Do you use online social media (such as blogs, wikis, social bookmarking and social tagging tools, social networks, microblogs such as Twitter, etc) within the context of your work? If so, how do you use them?
- Do you use online social media (such as blogs, wikis, social bookmarking and social tagging tools, social networks, microblogs such as Twitter, etc) outside the context of your work? If so, how do you use them?

- How important are these technologies in the way you create, access, and communicate information on a daily basis?

(Notes – Tools besides LIP)

LIP

- Describe for me, in your own words, the Library Intranet Portal (LIP).
- Do you personally use LIP? If so, describe for me an example of how you have used LIP in the past.
- Have you ever created a post on LIP? Why/what was it about?
- Have you ever replied to a post on LIP?
- Has a topic posted on LIP ever sparked a face-to-face conversation or debate among your peers? If possible, describe an instance of this.
- Do you find you more often create posts or reply to posts? Why do you believe that is?
- Have you ever thought about the way LIP is structured? Do you think there is a better model for sharing the kind of information you need at the reference desk?
- Do you think of LIP more as a place to connect and communicate with your peers, or as a place to access current information about the reference desk?
- Have you ever read a post by a co-worker on LIP about something you were not aware of, and that subsequently helped you with a question or questions at the reference desk? If so, describe.

- Have you ever learned something in the course of your work at the reference desk, and subsequently posted it on LIP to share with your co-workers? If so, describe.
- Has content on LIP encouraged you to try new approaches to reference work (e.g., a different way to perform a search)? If so, describe.
- Do you think of LIP as a tool to collect statistics about the reference desk?
- Do you think LIP could help facilitate assessment?
- What technologies besides LIP have you used in the past to find out or provide information critical to your work at the reference desk?
- How does LIP compare to previous or existing tools and technologies used in this manner?
- Describe the feature of LIP you find least effective (something you would like to see changed). If possible, provide an example of when you have used this feature.
- Describe the feature of LIP that you find most effective (something that you think works well). If possible, provide an example of when you have used this feature.
- Do you believe LIP is effective as a collaborative tool? Explain.
- Do you believe LIP is effective as an information management tool? Explain.
- Do you believe LIP could/should be considered as an online community of practice? Explain.

LIP as an innovation

Based on Rogers' Innovation Diffusion theory

- What did the Library use for internal communication and knowledge-sharing before LIP?

OR

- What did previous work environments that you've experienced use for internal communication and knowledge-sharing?
- Are LIP (or any of the methods present at MacEwan) better than these other methods?
- Do you think LIP effectively answers the needs of its users? In your opinion, what are those needs?
- Do you think LIP matches the values and goals of the Library?
Explain/how so?
- In general, do you find LIP difficult or easy to use?
- How has LIP benefited you in your role?
- How has LIP benefited the Library?

APPENDIX THREE: NVIVO CODEBOOKS

This appendix contains:

- Summary (A3.1);
- Codebook v. 1 (A3.2);
- Codebook - Final version (A3.3).

A3.1. Summary

As described in Chapter Four (“Coding Process”), the codebook evolved over time. The first version of the codebook as it appears in A3.2 was organized after the first pass of coding on the first three interviews. The structure and arrangement of categories had begun as the third interview was being coded (for more details, see section 4.5). The final version in A3.3 reflects the conceptual ordering of categories used to develop a comprehensive report of results in Chapter Five (“Results”)

Codebook - Use of Social Media for Knowledge Management in Academic Libraries

Parent Node Name	Name	Description
	ACTIVITY	Any kind of organizational activity discussed in the context of organizational communication and KM. (and discussion thereof)
	ATTITUDE	References that reflect a participant's attitude toward a technology or mode of communication. May also reflect an answer to a specific question posed in the interview guide designed to elicit a personal reaction to SM use. e.g. "Better model", "Importance of SM", "Order of pref".
	KEY CONCEPT	Addresses a key concept in my analysis. e.g. COP, dialogue, Innovation Diffusion, information access/access to info.
	MEDIUM	Any tool or technology used for communication or knowledge management. (and discussion thereof)
	MISC	Anything that doesn't fit any other categories, such as quotables, funny or outrageous exchanges/statements, and elaboration on issues that might not be directly related to the study but are still relevant (e.g. descriptions of librarians as a type - "librarians"-- so far the only Misc code.) Might also be: Answers that capture quantitative data about the individual participant, such as demographics (age, gender, title) and self-described responsibilities.
	USE METRIC	Factors for measuring an individual's or a group's use and engagement with a particular tool or technology (spec. SM). E.g. ease of use, frequency of use, reasons/examples of use, user benefits, user needs, usability issues.

Nodes\\ACTIVITY

	assessment	Use of a particular tool or technology to facilitate library assessment (either through the collection of statistics, or other analytics.)
	collaboration	Reference to collaboration as a reason for use of a particular technology or tool.
	formal training	Comment or reference to formal training (PD Days, courses, seminars, organized training sessions). In relation to "informal training".
	informal training	Comment on informal training.
	information retrieval	Issues related to searching and information retrieval (of a particular tool or technology). This code would seem to fall under the category of "usability issues", and would also be related to "information access".
	meetings	Office meetings (face-to-face) as a form of communication or knowledge sharing.
	scheduling	Scheduling as an activity facilitated by a particular tool or technology.

Parent Node Name	Name	Description
	social tagging	Any reference to social tagging as an activity, or the use of social tagging sites like Delicious.
	updating-notifying	Reference to the activity of updating or notifying as the reason for use of a particular technology or tool. (e.g. "LIP blog is used mainly as a notice board.")
	user commenting	User commenting as an activity related to the use of social media.

Nodes\\ATTITUDE

	better model	This code should specifically reference the "better model for knowledge sharing" question. In review, we may want to merge this with the usability issues code.
	discretion	Reference to a need for discretion, caution, or confidentiality as motive for using (or not using) certain modes of communication. This is a miscellaneous code (for now).
	importance of SM	This code relates directly to question about "how important (blank) is in the way you create, access and communicate on a daily basis?"
	liking	Reference to a purely subjective, not-always rational or justified affinity (or dislike) for a particular tool or technology. Closely related and may overlap with key concept "fun".
	need for standards	An expression that the tool or technology implemented lacks rules or standards (and may imply that participant is unsure how to use said technology as a result).
	order of pref	To capture answers to the question about tools for sharing info in order of preference (MacEwan only).

Nodes\\KEY CONCEPT

	COP	How the participant perceives (or doesn't perceive?) the existence of a community of practice within their library.
	dialogue	Any reference to the question of dialogue or conversation mediated through social media.
	fun	The idea of "fun" associated with a particular tool or technology.
	information access	Need for or use of a particular technology to access information. (Note, in particular, when it shows up in opposition to dialogue) Would want to note occurrences when there is no intersection with "documentation".
	Innovation Diffusion	Innovation Diffusion questions (only appear in context of LIP, in MacEwan interviews)
	virtual office	Any discussion surrounding the concept of using social media or other modes of communication (telephone, email, chat) to communicate between geographically disparate locations, e.g. separate library branches.

Parent Node Name	Name	Description
	work-life	When the distinction (or lack thereof) between work/public life and home/private life is referenced by the participant, in relation to their use of a particular tool or technology (e.g. Facebook)

Nodes\\MEDIUM

	blogs	Blogs (in general) as a basic social media tool for communication or knowledge sharing.
	documentation	Written documentation as a mode of communication or knowledge sharing.
	email	Email as a mode of communication or knowledge sharing.
	Facebook	Reference to Facebook as social media tool for communication or knowledge sharing
	face-to-face	Face-to-face as a medium for communication and knowledge sharing.
	Google Drive	Reference to Google Docs/Drive as a tool or technology.
	IM chat	Instant messaging as a mode of communication or knowledge sharing.
	intranet	Reference to intranet as a communication or knowledge sharing tool. (Distinct from LIP in the context of MacEwan)
	LibGuides	As a basic tool for communication and knowledge sharing (NOTE: this code might very well help highlight the nuances between communication and knowledge sharing)
	LIP	The MacEwan Library Intranet Portal as a mode of communication or knowledge sharing.
	online	All online tools as a mode of communication.
	RSS feeds	Reference to RSS feeds as a tool or technology.
	telephone	Telephone as mode of communication or knowledge sharing.
	Twitter	Twitter as social media tool for communication or knowledge sharing.
	wikis	Wikis (in general) as a mode of communication or knowledge sharing.

Nodes\\MISC

	demo	demographic info on participant (to be sorted later as attributes)
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Parent Node Name	Name	Description
	librarians	Random collection of descriptions of librarians (making or breaking stereotypes)
	responsibilities	The responsibilities (or "day-to-day tasks") the participant associates with their role as librarian / library staff.

Nodes\\USE METRIC

	ease of use	How easy a particular tool or technology is to use. (Most likely in the context of Innovation Diffusion)
	frequency of use	Participant comments on his frequency of use of a particular social media tool (this code should exclude all other forms of communication discussed, such as email, face-to-face meetings, etc.)
	reasons_examples of use	Reasons for and examples of posting or replying (or other use) using a given social media tool (spec. blog, social network, etc.) (WHY and HOW)
	usability issues	usability issues of a given technology, tool or mode of communication.
	user benefits	Mention of how a particular tool or technology benefits the user. Directly related to "user needs", may even duplicate each other. (Most likely in the context of Innovation Diffusion)
	user needs	Discussion about the needs of a user group of a given technology or tool. (Most likely used in the context of Innovation Diffusion)
	values alignment	How a tool or technology aligns with the values or a goals of the particular library, organization or institution that implements it. (most likely used in the context of Innovation Diffusion)

Codebook - Use of Social Media for Knowledge Management in Academic Libraries

Parent Node Name	Name	Description
	ACTIVITY	Any kind of organizational activity discussed in the context of organizational communication and KM. (and discussion thereof) (i.e., knowledge sharing practices)
	ATTITUDE	References that reflect a participant's attitude toward a technology or mode of communication. May also reflect an answer to a specific question posed in the interview guide designed to elicit a personal, values-based reaction to SM use. e.g. "Better model", "Importance of SM", "Order of pref".
	KEY CONCEPT	Addresses a key concept in my analysis. e.g. COP, dialogue, Innovation Diffusion, information access/access to info. (i.e., discourses)
	MEDIUM	Any tool, technology or medium used for communication or knowledge management. (and discussion thereof) (i.e., includes all social media, as well as other "knowledge sharing media". e.g., "Face-to-face", while not a technology, is here defined as a "medium".)
	MISC	Anything that doesn't fit any other categories, such as quotables, funny or outrageous exchanges/statements, and elaboration on issues that might not be directly related to the study but are still relevant (e.g. descriptions of librarians as a type - "librarians".) Might also be: Answers that capture quantitative data about the individual participant, such as demographics (age, gender, title) and self-described responsibilities.
	USE METRIC	Factors for measuring an individual's or a group's use and engagement with a particular tool or technology (spec. SM). E.g. ease of use, frequency of use, reasons/examples of use, user benefits, user needs, usability issues.

Nodes\\ACTIVITY

	assessment	Use of a particular tool, technology or medium to facilitate library assessment (either through the collection of statistics, or other analytics.)
	collaboration	Reference to collaboration as a reason for use of a particular technology, tool or medium.
	documenting	Reference to recording or documenting information for future reference as a reason for use of a particular technology, tool or medium.(e.g., Formal written documentation, as in emails; reference materials published on a wiki).
	formal training	Comment or reference to formal training (PD Days, courses, seminars, organized training sessions). In relation to "informal training". Reference to use of a particular technology, tool or medium to facilitate formal training.
	informal training	Comment on informal training. Reference to use of a particular technology, tool or medium to facilitate informal training.

Parent Node Name	Name	Description
	information retrieval	Issues related to searching and information retrieval (of a particular tool, technology or medium). This code would seem to fall under the category of "usability issues", and would also be related to "information access".
	lurking	"Lurking" as an approach to using SM. Can be considered an activity applicable to all social tools, and potentially other knowledge sharing media.
	meetings	The activity/practice of meeting(s) as a form of communication or knowledge sharing. (occurs face-to-face, but may also occur via other knowledge sharing media)
	photo-sharing	Any reference to photo-sharing as a social activity mediated through online tools such as Flickr, Instagram, or CMS plug-ins that allow the sharing of dynamic (visual) content.
	scheduling	Scheduling as an activity facilitated by a particular tool, technology or medium.
	social tagging	Any reference to social tagging as an activity, or the use of social tagging sites like Delicious.
	teaching	Any reference to teaching as an activity (usually in the context of IL sessions to students, but not strictly limited to that). Comparing "teaching" with the two "training" codes might prove interesting in future study...
	updating-notifying	Reference to the activity of updating or notifying as the reason for use of a particular technology or tool. (e.g., "LIP blog is used mainly as a notice board.")
	user commenting	User commenting as an activity related to the use of social media.

Nodes\\ATTITUDE

	better model	This code started by specifically referencing the "better model for knowledge sharing" question in interview script. It has emerged as an important category for capturing references where participants identify that a particular tool, technology or medium could be improved, or when they suggest a "better model" or potential alternative.
	discretion	Reference to a need for discretion, caution, or confidentiality as motive for using (or not using) certain modes of communication. This code has evolved to capture all comments regarding anxiety about privacy in knowledge sharing. Closely related to "fear of SM".
	fear of SM	Captures any expression of extreme anxiety toward social media or the use of social media.
	importance of SM	This code orig. related directly to question about "how important (blank) is in the way you create, access and communicate on a daily basis?" It has evolved to capture any expression or measure of the importance of SM in work or daily life.
	liking	Reference to a purely subjective, not-always rational or justified affinity (or dislike) for a particular tool or technology. Closely related and may overlap with key concept "fun".
	need for standards	An expression that the tool, technology or medium implemented lacks rules or standards (and may imply that participant is unsure how to use said medium as a result).

Parent Node Name	Name	Description
	order of pref	To capture answers to the question about tools for sharing info in order of preference (MacEwan only).

Nodes\\KEY CONCEPT

	COP	How the participant perceives (or doesn't perceive?) the existence of a community of practice within their library.
	dialogue	Any reference to the question of dialogue or conversation (i.e., two-way communication) mediated through social media or other knowledge sharing media.
	fun	The idea of "fun" associated with a particular tool, technology or medium. May also be associated with an activity/practice.
	information access	Need for or use of a particular technology to access information. (Note, in particular, when it shows up in opposition to dialogue, i.e., uni-directional interaction) Would want to note occurrences when there is no intersection with "documenting".
	innovation diffusion	Any comments or stories about the adoption or diffusion of a particular technology/tool/medium. (i.e., an attempt to measure the success of an implementation). This code originated by capturing answers to innovation diffusion questions (only appear in context of LLP, in MacEwan interviews, final section of interview script).
	virtual office	Any discussion surrounding the concept of using social media or knowledge sharing media (telephone, email, chat) to communicate between geographically disparate locations, e.g., separate library branches.
	work-life	When the distinction (or lack thereof) between work/public life and home/private life is referenced by the participant, in relation to their use of a particular tool or technology (e.g., Facebook)

Nodes\\MEDIUM

	bibliocommons	Reference to Bibliocommons platform (e.g., EPL OPAC) as social tool for communication or knowledge sharing.
	blogs	Blogs (in general) as a basic social media tool for communication or knowledge sharing.
	email	Email as a medium for communication or knowledge sharing.
	Facebook	Reference to Facebook as social media tool for communication or knowledge sharing
	face-to-face	Face-to-face as a medium for communication and knowledge sharing.
	Google Docs	Reference to Google Docs as a tool or technology. (This code is also used to capture references to Google Apps)
	IM chat	Instant messaging as a medium of communication or knowledge sharing.

Parent Node Name	Name	Description
	intranet	Reference to intranet as a communication or knowledge sharing tool. (captures references to both Staffnet and LIP)
	LibGuides	LibGuides as a basic tool for communication and knowledge sharing (NOTE: this code might very well help highlight the nuances between "communication" and "knowledge sharing")
	linkedin	Reference to LinkedIn as social media tool for communication or knowledge sharing.
	LIP	The MacEwan Library Intranet Portal as a medium for communication or knowledge sharing.
	online	This code captures unique references to Web 2.0 tools (e.g., social media, collaborative cloud computing apps) that do not already have a code.
	refworks	Reference to RefWorks as tool for knowledge sharing (occurrences appear to be tied to "collaboration"; would need to see more instances to confirm a relationship)
	RSS feeds	Reference to RSS (really simple syndication) feeds as a tool or technology. (interesting when this code comes up in distinction to blogs...)
	telephone	Telephone as medium for communication or knowledge sharing.
	Twitter	Twitter as social media tool for communication or knowledge sharing.
	wikipedia	Wikipedia as social media tool for communication or knowledge sharing
	wikis	Wikis (in general) as a medium for communication or knowledge sharing.

Nodes\\MISC

	Cameron v. Ruth	This code identifies any references where the participant explicitly compares local practices with other branch practices. (limited to University of Alberta sites; note that this was captured under "virtual office" for macewan-- will want to review to compare across set.) ***Have left this code here to indicate that attempt at comparison between branch libraries was made. This code only revealed minimal differences, not enough to effect the categorization of themes.
	demo	demographic info on participant (to be sorted later as attributes)
	librarians	Random collection of descriptions of librarians (making or breaking stereotypes)
	responsibilities	The responsibilities (or "day-to-day tasks") the participant associates with their role as librarian / library staff.

Nodes\\USE METRIC

	ease of use	How easy a particular tool or technology is to use.
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Parent Node Name	Name	Description
	frequency of use	Participant comments on his frequency of use of a particular social media tool (this code should exclude all other forms of communication discussed, such as email, face-to-face meetings, etc.)
	reasons_examples of use	Reasons for and examples of posting or replying (or other use) using a given social media tool (spec. blog, social network, etc.) (WHY and HOW)
	usability issues	usability issues of a given technology, tool or medium of communication.
	user benefits	Mention of how a particular tool or technology benefits the user. Directly related to "user needs", may even duplicate each other in some cases. (useful in the context of Innovation Diffusion)
	user needs	Discussion about the needs of a user group of a given technology, tool or medium. (useful in the context of Innovation Diffusion and COP)
	values alignment	How a tool or technology aligns with the values or a goals of the particular library, organization or institution that implements it. (orig. related to question re: innovation diffusion)

APPENDIX FOUR: LIP DATA TABLES

This appendix contains:

- Summary;
- Table A4.1: Modes of Communication;
- Table A4.2: What is LIP?;
- Table A4.3: Participant use of the LIP blog;
- Table A4.4: Perception of LIP as a social tool;
- Table A4.5: Use of the LIP blog at the reference desk;
- Table A4.6: Personal use of social media;
- Table A4.7: Functions of LIP.

A4.1. Summary

The tables included in this appendix were used for the research paper produced for LIS 599: Social Media and Knowledge Management, and represent the preliminary analysis of the first phase of interviews from May-August 2011. They provide a great deal of additional context to the Grant MacEwan University Library results, and specifically around the implementation of the Library Intranet Portal (LIP) and blog. The tables correspond specifically to questions asked in the interview guide (section A2.2).

Table A4.1: Modes of Communication

Participant	Mode(s) of Communication	Reasons
Alex	<ul style="list-style-type: none"> - Email - IM chat - Face-to-face - LIP (blog) - Telephone - Sticky note 	<p>“Email is primary. I get the odd phone call from a faculty member, but within the library we so rarely call each other. ...If there’s a quick question that I want an answer to immediately, I’ll IM. I do post to the blog, but it’s maybe once every couple of weeks, tops. Only if there’s something of very general importance for everybody in the library. I do check it every day. I’ll do face-to-face if it’s a quick question, but sometimes people need to consider... By email they can have time to craft an eloquent refusal to do it. [...]Sticky note would be at the very bottom of the list.”</p> <p>Why do you prefer email?</p> <p>“...because you know the person is getting it, and you can receive a more detailed, thought-out response.”</p>
Beth	<ul style="list-style-type: none"> - Email - Face-to-face - IM chat - LIP (blog) - Telephone 	<p>“Less phone, more email, or face-to-face. Occasionally, someone will post something to the intranet (LIP). ...There’s more emailing than there is face-to-face. Rarely by phone— only if it’s something that someone needs to know, like, right away. And then on occasion we do send chat messages for that, as well. Not [much] on our intranet. I check it often, to make sure I catch post. ...It’s good for getting out information, but if you don’t need that instantaneous response, you just need to get it out, or read it...”</p> <p>Why do you prefer email?</p> <p>“Because everyone is on email, everyone checks their email. And... it’s easy for people to do a quick reply.”</p>
Carol	<ul style="list-style-type: none"> - Email - Telephone - Face-to-face - IM chat - LIP (blog) - Google Docs - Shared hard 	<p>“Most of my communication...would happen online, just because I’m at a distant campus... Some of it on the phone, but most of it online somehow. Face-to-face stuff I usually will do with my staff, but if there’s something that needs to be documented or shared with more than one person then it’s always email. ...Probably if I had to pick a</p>

	drive	<p>percentage, like 20% [of online communication] would happen through something like LIP. Sometimes we use Google Docs to share stuff back and forth.”</p> <p>Why do you prefer telephone?</p> <p>“...I use to say email [is my preferred mode of communication], now I prefer the phone. It just takes too long sometimes, I’m too busy, I don’t have time to type out long and lengthy responses if I’m engaged in a dialogue. [...] It’s because it’s faster and right now my life is just, like, go, go, go, so a lot of stuff I have to know an answer to right now.”</p>
Deirdre	<ul style="list-style-type: none"> - Face-to-face - Email - Telephone - LIP (blog) - iGoogle/RSS feeds 	<p>“Primarily, I’m face-to-face. That’s me and my style. For me it’s important to connect with the staff every day. With other people, it depends. [...] With a lot of the Main campus librarians, it’s mostly email. Here with the staff and faculty, email is second by far. It’s mostly phone, face-to-face. [...] With blogs, wikis, LIP... I’m by nature a person who lurks. I access them, and read them on a daily basis. I have an iGoogle page with RSS feeds to keep me on top of copyright, whatever I’m interested in. I am, by nature, not a person who engages or responds back.”</p> <p>Why do you prefer face-to-face and email?</p> <p>“I like face-to-face simply because I think by nature I’m a people’s person. But it depends on the individual, it depends on the issue. There’s often that I prefer emails simply because I want to have a written record of what was said. I use email a lot, in that sense. [...]The management part, the written part, is important to me. So that is one reason why email works.”</p>
Elaine	<ul style="list-style-type: none"> - Face-to-face - Email - LIP (blog) - IM Chat - Telephone - - Videoconferencing 	<p>“Email, phone, face-to-face, chat, video conferencing, blogging... I would say it’s more face-to-face, face-to-face [and] email, I think that they’re pretty close... Let’s say I’m working on the reference desk and one of the printers are down. ...I’ll use the blog to put that out there because anybody who is on the desk will probably go to LIP. I know some of my younger colleagues don’t like talking on the phone, they prefer to chat [IM].”</p> <p>Why do you prefer email and LIP (blog)?</p> <p>“I think if you want a lot of people to know</p>

		something...the blog or email is better. If it's face-to-face, sometimes you want a written... back-up. [...]People use their email all the time whereas with LIP, with the blog on LIP it might not be something they would go to every day.”
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Table A4.2: What is LIP?

Participant	What is LIP?
Alex	“It is an interactive site available to library personnel, and that includes actually all four campuses and all library staff. It’s a way to just manage all of the ubiquitous documentation... I would say that’s the primary purpose. The blog, even though it’s kind of front and center, is to me secondary. It’s a good way to keep up to date. [...] If you need to know something, it’s right there. Your first step is to go to LIP, and you can look up “collections policies” or “instruction guidelines”, things like that.”
Beth	“It seems to be sort of like a repository for library documents. It’s kind of like the online version of a shared common drive. ...A lot of common documents go up there; reports, projects, the schedule is up there. And then, if something happens, like the printers go down, and everyone needs to know that, they’ll post a message up there. So it’s on Drupal, so it’s not really a blog, it’s not really a wiki, I don’t know how to describe it. It’s kind of a hybrid of those two, I would say.”
Carol	“What it is intended to do and what it is are kind of two different things. What it is right now is mostly a blog to reduce people’s emails... and provide them with a central location for all of that fast, quick, need-to-know information. A lot of what happens at the reference desk, right... And then it’s also a place for people to upload and share documents, basically. I think it’s supposed to be much more of the latter than it’s actually turned out to be... The blog section of LIP is primarily what people are using it for because the sharing of documents part doesn’t work necessarily as well as it could, I think.”

Deirdre	“It’s a godsend. We used to have everything all over in a thousand folders— it was a mess. At first I didn’t quite get it. ...How is this going to help? I saw it as a duplication of service. Now that it’s up, I couldn’t live without it. I’m not a person who posts, because I’m not at Main campus. A lot of the stuff that posts on...LIP relates to reference issues or reference questions at Main campus. [...] But as a way of accessing stuff— like accessing phones, accessing policies, even accessing presentations...—like, it’s a central repository. From that perspective, it’s invaluable.”
Elaine	“It’s a way of getting information across to a large group of people. It is a way to stay connected and it’s very helpful, especially if you are alone on the reference desk... you could always check LIP for either a blog posting or something. I think it’s handy, it’s needed. [...]I can’t imagine not having it. You know when it comes to the desk schedule, when it comes to all of the policies and all of that information, where else could it be?”

Table A4.3: Participant use of the LIP blog

Participant	Viewed (a)	Written a blog post (b)	Replied to a blog post (c)	Sparked a dialogue offline (d)
Alex	Daily	Yes	No	Yes
Beth	Daily	Yes	Yes	Yes
Carol	Daily	Yes	Yes	Yes
Deirdre	Daily	Yes	No	No
Elaine	Daily	Yes	Yes	Yes

Table A4.4: Perception of LIP as a social tool

Participant	Is LIP...	
	A place to connect and communicate with peers?	A place to access current information about the ref desk?
Alex		✓
Beth		✓
Carol		✓
Deirdre		✓
Elaine	✓	✓

Table A4.5: Use of the LIP blog at the reference desk

Participant	Have you ever...	
	Read something on LIP that helped you with questions at the ref desk?	Learned something while working at the ref desk that you shared on LIP?
Alex	✓	✓
Beth	✓	✓
Carol	✓	✓
Deirdre		
Elaine	✓	✓

Table A4.6: Personal use of social media

Participant	Used (<i>wikis, blogs, etc</i>):	How important are these tools for you?	Comfort level with social media and Web 2.0
Alex	<ul style="list-style-type: none"> - Facebook - Twitter - Reading blogs/RSS feeds - User reviews on consumer websites 	<p>“I’m a little bit shocked to see how much I rely on them. Particularly things like comments. ...If I’m buying anything that’s worth, say, more than \$75, I generally go online and read user comments... It seems kind of silly, but it really contributes to your understanding. Even further than that, you read a news article... I want to see what people are saying about it. ...At the other end of the spectrum, if you’re doing hardcore research...people are rating it, people are commenting on it, it’s incredible to see some of that stuff. So, yeah, I think it’s hugely important to how I access information.”</p>	High

Beth	<ul style="list-style-type: none"> - Facebook - Twitter - Personal blog 	<p>“Day-to-day, it’s very important to me. [...] I have received jobs because of my blog and Twitter, so I think it’s very important to stay up with it, and I enjoy it.”</p>	Very High
Carol	<ul style="list-style-type: none"> - Facebook - Twitter - Reading/commenting on other’s blogs - Keeping a personal blog - Photo-sharing - Google Chat - Google Docs - Skype 	<p>“They just sort of become part of your life. ...I’m realizing more and more that I’m relying on these kinds of media to keep me in touch with what’s happening in the world. Which is kind of a scary thought... Less and less, I’m relying on traditional media like newspapers, even news sites, and I’m just going to the places that my friends, who all have the same shared outlook on life as me, have. ...I am worried about if I was to lose contact to all of my social networks— I think I would feel out of the loop for awhile, but I don’t think...it’s completely irreplaceable. I think I could live without Facebook.”</p>	Very High
Deirdre	<ul style="list-style-type: none"> - Facebook - Reading blogs/RSS feeds - Wikis - Dropbox - Evernote - Delicious (social bookmarking) 	<p>“...It’s not so much for creating, accessing and communicating information... For me, it’s very important for the way I manage stuff. [...] I use technology to speed things up, to organize stuff, to manage it.”</p>	High (self-described as not “tech savvy”)
Elaine	<ul style="list-style-type: none"> - Reading a blog 	<p>“I can only say that I use LIP. The only time I’ve blogged about anything is on LIP.”</p>	Low

Table A4.7: Functions of LIP

Participant	Do you consider LIP...		
	A collaborative tool?	An information management tool?	An online community of practice?
Alex		✓	✓
Beth		✓	✓
Carol		✓	
Deirdre	✓	✓	
Elaine	✓	✓	✓

APPENDIX FIVE: PROJECT COMPLETION REPORT

This appendix contains:

- Summary (A5.1);
- Project Completion Report (MacEwan LIP) (A5.2).

A5.1. Summary

As part of my focus on the Library Intranet Portal (LIP) as a social media implementation at the Grant MacEwan University Library, I requested and received documentation in the form of project reports describing the goals of the implementation and project outcomes. I have included one of these reports to provide added context on the rationale behind the development and implementation of LIP and the LIP blog by the Grant MacEwan Library Reference Staff. Names of individuals and direct identifiers have been redacted.

LIS Project Completion Report

Project Title: Reference Staff Intranet Pilot Project

Date Completed: January 2009

Project Sponsor: [redacted]

Team Leader: [redacted]

Team Members: [redacted]

Goals/Scope

The pilot project will create a friendly, efficient, and easy-to-use staff intranet for internal communication and information sharing among Reference Staff and Campus Library staff. Upon completion, the project will be evaluated and considered for expansion to other LIS departments.

The primary goals of the Intranet Pilot Project are:

- To create an easy-to-use web-based space for staff communication, incorporating elements such as blogs, team minutes and discussions, current news / announcements, and image galleries.
- To create a process-based, well-organized framework for internal information and documents such as policies, forms, guides, vacation / desk schedules, training documentation, staff directory; and tools such as scheduling software, collection tools, web-editing software.
- To investigate the potential for expansion to other LIS units.

The secondary goals of the Intranet Pilot Project are:

- To improve decision-making and staff efficiency by making relevant information easy to find and use.
- To improve communication, teambuilding, and community among staff and teams by providing an online space conducive to idea-sharing and discussion.

Project Outcomes

- a) This pilot project resulted in the creation of LIP (Library Intranet Portal), a web-based staff intranet designed for use by Reference staff at all campus. The Intranet team worked with Reference staff to develop an understanding of their needs and of the functional requirements of the proposed intranet. They then developed a task-based site structure that took into account the kinds of functions Reference staff perform on a daily basis. The team also audited the content of the Ref Share drive to identify relevant content and content owners. Using the Drupal CMS, the team then built the intranet, incorporating desired functionality. The intranet was promoted and publicized through a naming contest, and staff were encouraged to submit ideas for logos. Finally, staff were trained in creating and editing content.

The intranet team evaluated the pilot project and has provided recommendations for future expansion to the rest of LIS (see: Recommendations)

- b) The team performed well as a group. It was important to have representation from campus staff, from Library IT and from Ref Services chair. Major tasks, like the content audit, were undertaken by smaller subcommittees. The small size of the group made it easy to discuss major issues and come to resolution quickly. Having representation from the Campuses ensured that we were able to create an intranet that was usable for all Ref staff, and having the direct involvement of Library IT on the group significantly streamlined technological processes.
- c) Best practices: Defining the project goals, timelines, and milestones helped to keep the project on track. Regular meetings with team members, and creating small groups to work on specific tasks also moved the project forward. It was also useful to include all campuses in decisions, and ensuring that LIP could meet their needs as well.

Lessons learned: Needed more buy-in from some staff – the team could have spent more time with individual staff members to ease their concerns and provide additional training. The technology (Drupal) doesn't work as well as we'd hoped for file attachments / storage, necessitating the continued existence of the Ref Drive.

- d) Overall, the Intranet Pilot Project has successfully completed the goals above. The primary user group, Reference staff at City Centre and campus libraries, is using the intranet (LIP) to communicate with each other, share information, and link to tools and resources. Staff are uploading minutes from meetings, using the blog to provide Reference Desk updates, and uploading presentations and speaking notes. LIP has also proved to work effectively for City Centre staff as a Reference desk scheduling tool, and has significantly streamlined the scheduling process. Campus staff have also commented on the improved connection they feel with City Centre Library and staff.

Recommendations

- LIP is very Reference-focused and doesn't meet the needs of any other LIS departments. We recommend that a project should be undertaken to create a staff intranet for all LIS staff based on a similar model and using the same technology. To ensure a cohesive overarching design we recommend that this happen as a single project, rather than each unit being added independently. However, each unit should still have a customized process-based interface unique to their needs and workflows. Any project proposal should include significant consultation and needs assessment. The project team should be representative of all units and include advisory membership from the Pilot Project team.

Continuity/Support Plan

- Each campus will have Intranet experts who can provide some peer support to other staff with editing and creating content.
- more concrete guidelines for content creation and file naming will be added to LIP.

Submitted by: [redacted]

Date: *February 17, 2009*

APPENDIX SIX: CAMERON SOCIAL MEDIA GUIDELINES

This appendix contains:

- Summary (A6.1);
- Social Media Tools in Cameron Library – Guidelines (A6.2).

A6.1. Summary

In order to better understand Cameron Library’s policy on social media use, I requested and received a copy of the social media guidelines circulated to their public service staff. These guidelines dictate how they currently use social networking sites (SNS) like Facebook and Twitter. Names and direct identifiers have been redacted.

Social Media Tools in Cameron Library – Guidelines

A. Purpose: The Cameron Library Public Service Team experiments with social media tools in order to make announcements and to connect with patrons.

B. Responsibility: Under the direction of the Public Service Manager, two Public Service Assistants make posts and respond to posts by followers.

C. Strategies: We use social media applications to:

1. Make announcements of interest to primary users: students and researchers
ie: Hours changes, facilities updates, announcements of events and displays, explanations in September of Group Study Rooms, EPLGo & L-Pass, etc.
2. Provide information and make comments of relevance to the academic schedule
ie: “Good luck on your exams”, “It’s beautiful outside. Who cares? You need to study! Cameron Library is open 24/7 during exams...”
3. Provide users with relevant and timely information about library resources
ie: Promote Discovery Tools, announce new databases, etc.
4. Consult with users
ie: Ask users’ opinions on issues such as library hours, noise levels, etc.
5. Engage users - make posts of interest to Science, Engineering, and ALES disciplines to generate discussion or interest
ie: Announce international, national, and local events and observances, such as *Environment Week*

D. Promotion:

1. Include links to Cameron Library social media applications on appropriate websites and libguides.
2. Include text, images, and QR codes for Cameron Library social media applications on general and course-focussed handouts, brochures, etc.

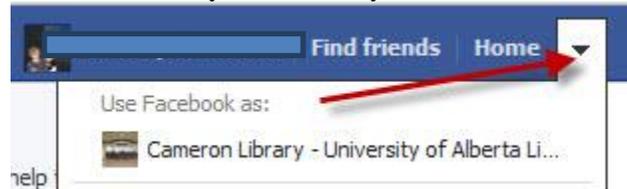
E. Policies & Procedures for Specific Social Media Applications:

1. Facebook

Cameron Library has a Facebook page. The url is <http://www.facebook.com/UACameronLibrary>
Page administrators: [Redacted]

How it works:

1. Administrators login to their personal Facebook accounts, then choose to “Use Facebook as Cameron Library - University of Alberta Libraries”



2. Administrators receive email notifications of Facebook posts.
3. [Redacted] regularly check the page and respond to user posts, in consultation with [Redacted].
4. [Redacted] make announcements and posts 1-3 times per week. Please do not post too many times. Announcements will be lost, and users could get annoyed.
5. Links to other social media applications: We have made the decision not to link Facebook posts to our Twitter account, so that we have the flexibility to make posts that are longer than 140 characters. This policy can be reviewed over time.
6. Assessment: Use Facebook insights to learn whether we are reaching and engaging with our users.
7. Local landscape: other unit libraries also have Facebook pages. There was once a system-wide Facebook page, but it is now unused. ITS staff made attempts early on to create a library catalogue search app for Facebook, but this is not currently supported. Would like to see this attempted again, and/or the possibility of including the IM widget in unit library Facebook pages.

2. Twitter

Cameron Library has a Twitter account:

Administrators: [Redacted]

Note: All library staff have access to the Twitter account

How it works:

1. The Twitter account is registered to [Redacted]@ualberta.ca. Email notifications come to [Redacted]@ualberta.ca. [Redacted] has set up the account so that all notifications from Twitter will be marked with a blue Twitter label. Desk staff will leave Twitter notifications in the inbox until Sonya or Marc delete them. All staff will notify [Redacted] if there are any concerns with Twitter activity.
2. [Redacted] regularly check the Twitter account, and respond to user tweets, in consultation with [Redacted].
3. [Redacted] tweet announcements and posts 1-3 times a week, and retweet relevant tweets from feeds that we follow.
4. Within reason, we follow Twitter feeds of interest to the Faculties of Science, Engineering, and ALES, the University of Alberta in general, libraries, and

information. All staff will inform the administrators of feeds of interest to follow.

5. Local Landscape: there is a system-wide @uofalibraries Twitter feed (administered [Redacted]), which we follow. [Redacted] has an engineering librarian twitter feed as well. Other unit libraries also have Twitter feeds.

3...

F. Tools:

All images below are saved in the following folder: Y\[Redacted]...

a) Facebook

Code for Cameron Library Facebook badge

[HTML/javascript code removed from document]

- Cameron Library Facebook QR code



- Badge, QR Code and URL combo image



b) Twitter

Code for “Follow us on Twitter” button



[HTML/javascript code removed from document]

APPENDIX SEVEN: THEORETICAL FRAMEWORK – ALTERNATIVE MODELS

This appendix contains:

- Summary (A7.1);
- Figure A7.1-4.

A7.1. Summary

The theoretical framework for my study emerged from the data through the qualitative coding process. The six relationships described in section 6.1.1 formed based on my interpretation of the data and the manner in which it was shaped into conceptual categories. However, while the relationships seem clear enough in writing, trying to generate a visual representation of that framework proved challenging.

This appendix includes different versions of the visual models for my framework. Each one has its strengths and weaknesses. It is my intention that future research can build on my framework and develop a model that appropriately captures the dynamics at play between the theorized conceptual categories.

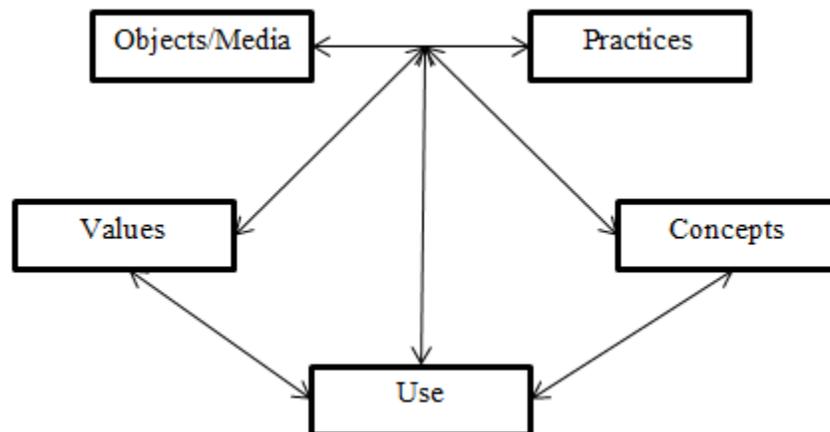


Figure A7.1: *Framework for studying how social media are being used for knowledge sharing in academic libraries, version 1.*

Figure A7.1 is the first serious mock-up of my framework, which appeared in an early draft of Chapter Six. With this model, I intended to emphasize the relationship between objects/media and practices as fundamental; that is why all other concepts relate not to the individual categories of “objects/media” and “practices” themselves, but rather to the line that represents the relationship between the two. This poses a problem, however, in that it is technically possible for me to consider the intersection of just objects/media and use, for instance. A bigger problem with this model was the absence—or, more accurately, the lack of acknowledgment—of other possible relationships. Supervisors posed the question: what about the relationship between values and concepts? The answer (as indicated in section 6.1.1), of course, is that there was not enough evidence in my analysis to theorize that relationship. The central importance of “use” was also fundamental in the construction of this model, and in discussion with supervisors I emphasized that the ‘T’ formed by “use” “objects/media” and “practices” was an essential feature of my framework upon which other conceptual categories like “values” and “concepts” were extensible; feedback from supervisors suggested, however, that this extensibility was not evident in my model. It was suggested I use different weights of lines to represent these different measures of relationships.

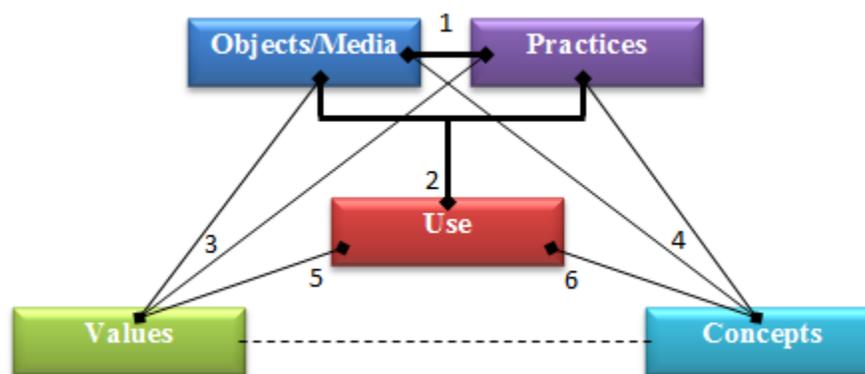


Figure A7.2: *Framework for studying how social media are being used for knowledge sharing in academic libraries. Statements of relationship are identified by number, and represented as a solid line between two or more conceptual categories.*

Figure A7.2 is ultimately the model I used to represent my framework in Chapter Six (“Discussion”). While it is quite similar to Figure A7.1, it does address the issues raised by my supervisors regarding the original model.

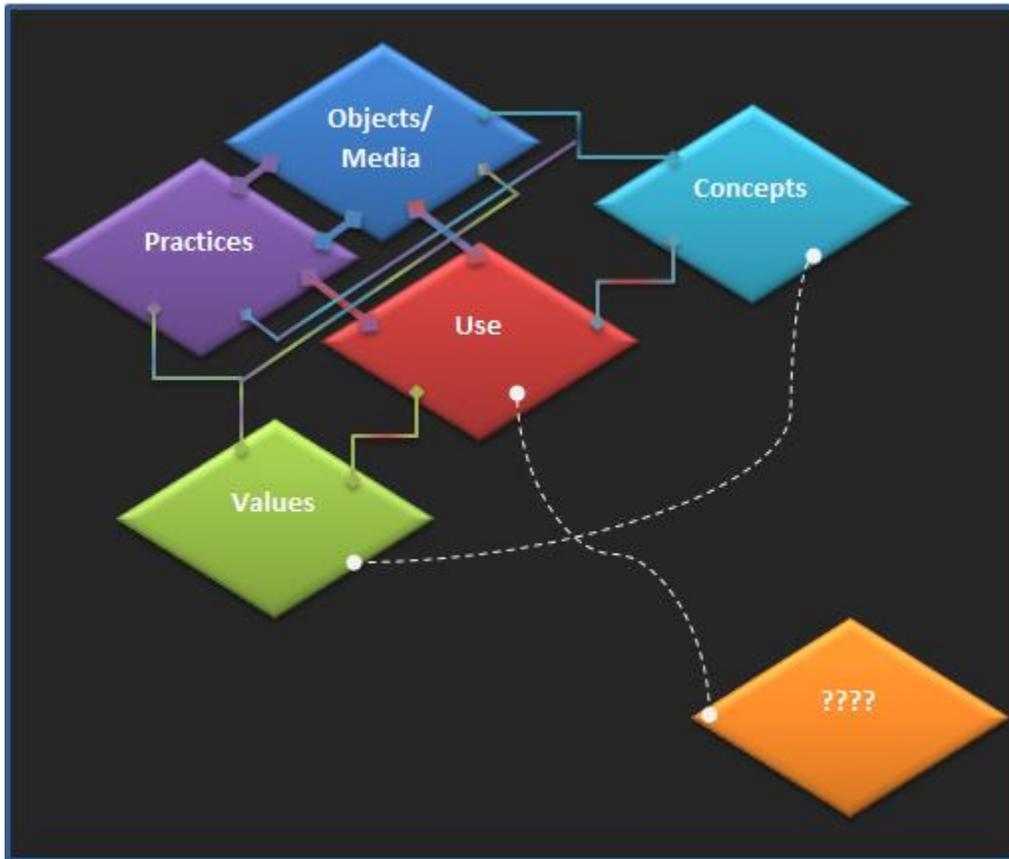


Figure A7.3: *Framework for studying how social media are being used for knowledge sharing in academic libraries (as a network).*

Before settling on Figure A7.2 as the final version, however, I did go through a couple more experimental iterations. Figure A7.3 was created using the metaphor of the network—a metaphor that recurs continually throughout my the data, my analysis and, indeed, my thesis. This model addresses the issues identified in the discussion over Figure A7.1, while also incorporating some of the implications A7.2 sadly lacks. The merging of colours in connector lines emphasizes the nature of these relationships—particularly in considering the fluidity between objects/media and practices. The colours and varying weight of connector lines are meant to highlight this element of permeability between

certain categories (section 4.8.2). The presence of a sixth category also suggests the possibility of categories not captured in my coding, that “extensibility” I was able to convey in earlier models.

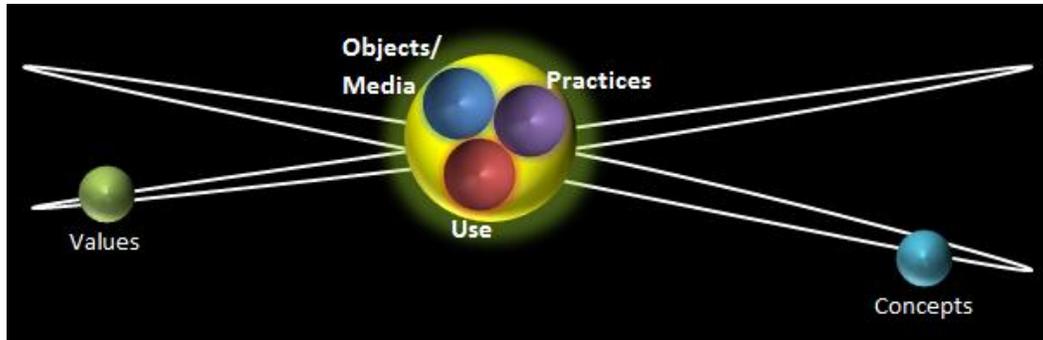


Figure A7.4: *Framework for studying how social media are being used for knowledge sharing in academic libraries (as a solar system).*

Figure A7.5 depicts the framework for analysis by delineating the six relationships using an altogether different metaphor: the solar system. At the center of the framework is a triad formed by “objects/media”, “practices” and “use”; without these three categories, the model conveys, an understanding of social media use for organizational knowledge sharing is not possible. In my notes on this particular version of the model I provide these additional clarifications:

“Objects” (or, more accurately, “Medium/media”) are the *vehicles* for communication; “Practices” are the normative applications of “objects/media” in the organizational context; and “Use” interacts with both to determine how knowledge sharing media and practices manifest through the agency of one or more *user(s)*. These three categories share the strongest bond of all, based on how they emerged in my analysis. “Personal values” (ATTITUDE) and “concepts” (KEY CONCEPT) orbit around this core

formed by “objects/media”, “practices” and “use”; I would suggest that other possible concepts might relate to this conceptual core in the same way, much as a planet reacts to the greater gravitational force of a star.

The idea to attempt a model that represented my framework through the metaphor of celestial bodies emerged from discussion with my supervisors. I believe there is a great power in conceptualizing relationships as gravitational tensions; unfortunately, in this case, I am not yet at a point in my research where I can resolve how I might separate particular relationships between two conceptual categories (e.g., concepts and use). In Figure A7.5, the aspect of the metaphor that is so compelling—that is, that *all* concepts exert varying degrees of force (i.e., influence) on each other—is also what makes it so problematic.