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January 2015

Information Literacy in the Digital Age

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I'm proud to announce the iSchool Student Research Journal's (SRJ) publication of second issue of Volume 5. This issue highlights the importance of technology in the LIS field, which has expanded the field in interesting ways. Information Professionals are not only rising to the challenge of providing information through technology but are creating the means for patrons to increase their information literacy. No longer does a student or researcher have to walk into a physical space in order to find material. Librarians use digital services as diverse as geospatial technology, mobile devices, genealogy software, blogs, e-readers, and websites to provide access to patrons.

However, as we see in these papers, despite all the fun and convenience of digital technology, sometimes a hard copy of a research document inside a brick & mortar library found with the assistance of a helpful librarian remains the best way to help our patrons.

The four articles that passed the journal's rigorous peer review article and Dr. Ziming Liu's Invited Contribution focus on the many ways LIS professionals contribute to information literacy through technology.

Dr. Liu's article "Information Behavior in the Mobile Environment: An Overview" reflects the increasing use of mobile devices and highlights the findings of his project to investigate mobile information behavior among undergraduate students in China. Motivations, strategies, preferences, and the implications of this type of behavior to LIS professionals are outlined in his article.

"Rethinking Assessment: Information Literacy Instruction and the ACRL Framework" by Melissa Anderson, discusses the increase of information literacy instruction by university librarians and the need for effective evaluation of this service. In particular, Anderson stresses that in order to "design assessment exercise that align with the learning goals of the (ACRL) *Framework*.....a variety of contemporary, collaborative educational tools, such as guided group discussions, online discussion boards, and social media platforms" is necessary.

Catherine Lucy's article continues the theme of the unusual and unexpected ways that technology is changing the information world. "Research Trends & Emerging Technologies for Genealogists" studies the rise in the use of technology to assist genealogists in their quest to find their family roots. This study focuses on "...traditional tools and methods utilized by genealogists...and an analysis of emerging research trends and technologies that are popular with today's genealogy community".

I found Gina Nichols' article, "Merging Special Collections with GIS Technology to Enhance the User Experience" especially fascinating as I am unfamiliar with Geographic Information System (GIS) technology. As Nichols' says, "Twenty-first century collection managers have reached a point where they must provide more innovative digital services to patrons or risk becoming irrelevant" as she discusses how merging geospatial technology with historic materials is transforming special collections with this cutting technology.

The final article "The Tumblarians" by Tamarack Hockin discusses the emerging trend of microblogging and the freshly coined term 'tumblarians' a combination of 'tumblr' (a popular microblog site) and 'librarian'. This paper explores how tumblarians fit within existing LIS literature and provides a preliminary examination into their community.

This issue was pulled together through the efforts of SRJ's Managing Editor, Janet Casey, and her hard-working editorial team. Content editors Josh Smith, Camille Peters, Kristen Clark, Melissa Anderson, Devon Lee, and Rebecca Padrick worked hard in their roles as peer reviewers along with copy editors Mary Alice Kolonay and Laurel Diskin.

I thank everybody who contributed to this issue including those graduate students who submitted their manuscripts for review. A special *Thank You* to Dr. Bernier, our Faculty Advisor, who continues to give his time and expertise to SRJ. As well, I sincerely thank our Editorial Board members, faculty and iSchool administrators for their continued support of iSchool's Student Research Journal.


January 2015

Information Behavior in the Mobile Environment: An Overview

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Introduction

The proliferation of Internet-capable mobile phones (or smartphones) has brought a significant change in information access. The wearability of smartphones enables communication while physically in motion. Smartphones are now poised to overtake desktop and laptop computers as the most common web-access device (Nicholas et al, 2013). They have become a vital device of anytime, anywhere access to information on the web for hundreds of millions users (Church et al, 2007).

The pervasiveness of mobile technology is forming “a distinct culture where learners repeatedly use mobility and awareness of their immediate context as starting points for keeping social contact alive, accessing fresh content, getting local information and becoming visible as creators and producers of content” (Kukulska-Hulme, 2010). As smartphones become ubiquitous, they increasingly influence the way in which students seek and use information. It is important to understand the emerging information behavior of students as a result of wide spread use of smartphones.

The ECAR study of undergraduate students and information technology, 2013 report reveals that 76% of undergraduate students in the United States own a smartphone, and smartphone ownership is even more common outside the U.S. (e.g., 81% in Canada). The report also indicates that students are ready to embrace their mobile devices more for academic purposes (Dahlstrom et al, 2013).

The motivation behind our project is to investigate information behavior in the mobile environment. A survey of 205 undergraduate students was conducted in China between November 2013 and February 2014. Undergraduate students in China were selected as the subjects of our study for three reasons: (1) They are young and educated, and always open to new technologies. Almost every undergraduate student in China today owns a smartphone. (2) They spend a significant amount of time on reading, and they frequently use their smartphones for many of their information activities. (3) Since undergraduate students in our survey are mostly 18-22 years old, the impact of generational differences on information behavior is kept to a minimum. This report highlights some of our findings.

Motivations for Using Smartphones

People often need information while on the move. Being mobile not only influences the types of information people seek, but also the strategies employed (Sohn et al, 2008).

Mills’s study (2009) indicates that the majority of respondents at the University of Cambridge primarily use their smartphones to make calls, send text messages, and take pictures. A recent study of smartphone usage behaviors in Malaysia also reveals that nearly half (47%) of respondents don’t use their smartphones for blogging (Osman et al, 2012). Campbell and Park (2008) note that adolescents and young adults are known for their distinctive use of smartphones to establish and reinforce their social network ties. Smartphones play an important role in helping young people keep social contact alive and support them as creators of content.

Survey results of our project show that a large motivation for smartphone users in China is staying connected to social networks. Over 88% and 54% of survey respondents use their smartphones for WeChat--a mobile phone text and voice messaging communication service in

China--and micro-blogging, respectively. In addition, browsing news, searching the web, and checking online dictionaries are also popular activities among these young smartphone users.

Female users are more likely than their male counterparts to use their smartphones for the purposes of micro-blogging (61.3% vs. 45.7%), checking online dictionaries (64.0% vs. 41.5%), reading novels (40.5% vs. 25.5%), and sending pictures (35.1% vs. 23.4%). These differences are statistically significant.

About one third of our survey respondents use smartphones for email, reading novels, and sending pictures. While students do some light reading on their smartphones, very few of them use their smartphones for academic purposes such as accessing library resources (7.8%) and reading scholarly papers (5.4%).

Strategies to Cope with the “Always-On” Nature Of Mobile Devices

Distraction is not a new problem, but the arrival of a mobile environment raises this issue to a new level of attention. Horrigan (2009) stresses that the "continual information exchange" in the mobile world could cause “ 'serial digital distraction' as people respond to a slew of bits cascading to them.”

The “always on” nature of mobile devices means users are constantly connected and always available. Nearly 60% of respondents in our survey constantly check their smartphones, while about 20% check their smartphones during class breaks, and 7% check them by the end of the day. One respondent notes: “Most people check their cell phones before brushing their teeth in the morning. I must admit that I am so reluctant to turn off my smartphone even when I am sleeping, especially if a response to a message is expected.” Another respondent stresses: “Because of the real time nature of mobile communication, young people are expected to respond immediately. Replies sent 30 minutes later must be accompanied by an apology.” It is interesting to note that female smartphone users tend to be more disciplined than male users when dealing with the “always on” nature of mobile information. Compared to 48.2% of female users, 72.3% of male users report that they check their smartphones constantly. A higher percentage of female users report that they check during class breaks (28.2% vs. 11.7%) or simply ignore it (17.3% vs. 8.5%). The differences are statistically significant ($X^2= 14.7$, $p<0.01$).

Continuous connectedness supports a sort of incremental social synchronization for plans, schedules, and progress (Dempsey, 2009). However, if continuous communication becomes pervasive, it will become a serious distraction. Walsh (2012) finds that people “constantly multi-tasked with their devices and found [the devices] acted as a serious distraction at times, even to the extent of preventing them from processing new information arriving. Before they could think about and process any piece of information it had been replaced by something newer, creating a large amount of transient, unused information.” One female respondent in our survey indicates that in this constantly connected world, one must learn how to use discipline-- one must put off less essential needs until later, or simply ignore them. Another respondent warns: “Over connectedness will reduce time available for other activities such as physical exercise.” He adds: “With the smartphone, it is so easy to ask for help. People may lose the spirit to do things independently.”

Preferences for Devices/Media

Church, Smyth, Cotter, and Bradley (2007) investigate the information behavior of European mobile Internet users. They find that 94% of sessions consist of just browsing. Dominated by the desire for quick, often context-specific information, the types of information people read while they are on the move are often factual and small. A recent study on information behavior in a mobile environment also finds that: “Any speculative information, information that needed reading in depth, or information that required further analysis was generally avoided” (Walsh, 2012).

Learners tend to move between devices for different parts of a learning task. Yarmey (2011) suggests that the “information literacy world would benefit from a closer parsing of when and why users switch between devices.” People tend to read short texts on their smartphones, and read serious materials on other devices (e.g., desktop or laptop computers) or on paper. Survey results of our project clearly indicate that only a very small number of survey respondents prefer reading serious documents on their smartphones, accounting for 2.0% for reading research materials and 2.9% for teaching-related materials, respectively.

14.6% of survey respondents like to read research materials, and 17.1% like to read teaching materials on their e-readers (e.g. Kindles) or tablets (e.g., iPads). Major reasons include bigger displays, a better reading experience, more functions, and ease in carrying. One respondent comments that: “Unlike the smartphone, the size of the iPad is ideal for reading.”

Nearly half of the survey respondents prefer reading research materials on their desktop or laptop computers because of bigger screens, faster network speeds, and ease in editing, searching, navigating, downloading, and storing materials. One respondent indicates: “While the iPad is a good choice for reading, it is inadequate for writing. I would avoid it when writing a long document.” Another respondent explains: “I like to use desktop or laptop computers when reading research materials because of the ease in accessing library materials and the convenience in opening file folders.” It is interesting to note that nearly 65% of survey respondents prefer reading their research materials electronically, while only 35.1% prefer reading research materials on traditional paper media. Many participants cite their preferences for desktop or laptop computers because of the attachment and a better reading experience. It seems that the new generation that is growing up with new technologies is more adaptive to digital reading.

For teaching related materials (e.g., textbooks), however, 60% of survey respondents still prefer reading on printed media, because of ease in carrying and note-taking, a pleasant reading experience, in-depth and concentrated reading, repeated reading, and an attachment to tradition. Printed media remain an effective tool of learning. Unlike other popular reading materials, teaching materials (e.g., textbooks) have different content, much of which is unfamiliar. Furthermore, compared to reading for pleasure, teaching materials are read for learning and retention (Daniel & Willingham, 2012). Konnikova (2014) notes: “People prefer physical books, not out of old-fashioned attachment but because the nature of the object itself has deeper repercussions for reading and comprehension.”

While nearly 65% of the respondents prefer reading research materials electronically, only 40% of them want to read their teaching materials electronically (e.g., smartphones, tablets, e-readers, desktop or laptop computers). One possible explanation is that the survey subjects are undergraduate students who may pay greater attention to teaching materials (especially for

examinations) than to research materials. Future research is needed to investigate the relationship of education levels with the choice of reading media.

Liu and Huang (2008) find that female readers demonstrate a stronger preference for and a greater reliance on paper as a reading medium than male readers. Female readers are more linear and thorough readers, while males are more active browsers. Survey results of our project consistently show that female readers have a stronger preference for research materials on paper than male readers (42.3% vs. 26.6%. $X^2=5.539, p<0.05$) and with teaching materials (66.7% vs. 52.1%. $X^2=4.483, p<0.05$). These differences are statistically significant.

Circumstances of Reading on Smartphones

Our study finds that smartphones enable students to make full use of fragmentary time to read. About 80% of survey respondents report that they read on their smartphones during class breaks or while waiting for people. The use of smartphones for reading is often stationary rather than completely mobile. Many participants in our survey read on their smartphones while they are in their dormitories (75.6%) or studying in libraries or classrooms (55.6%). It is interesting to note that a higher percentage of males report that they read on their smartphones when taking public transportation (84.0% vs. 64.9%) or while in the restroom (51.1% vs. 36.0%). These differences are statistically significant.

Burnett and Jaeger (2011) note that unprecedented access to information in ever more portable devices will likely reshape human information behaviors. People interact with mobile information in varied and unpredictable locations or while in transit. Because the wearability of smartphones enables communication while physically in motion, the contexts of information engagement become less definable (as opposed to being in homes and offices). The mobility of information engagement is an important issue that human information theory should embrace (Burford & Park, 2014).

Implications

Smartphones are used predominantly for accessing news and connecting to social media. Very few students use their smartphones for academic purposes such as accessing library resources or research. While students use smartphones for reading e-books, much of this reading is recreational during their spare time. Scholarly reading is usually avoided.

Levy (1997) observes “a general societal trend toward shallow, more fragmented, and less concentrated reading” in the digital environment. The widespread use of smartphones has played an important role in elevating this trend to a new level. The distraction caused by the “always on” nature of mobile devices is likely to have serious implications for retention and learning. As noted by several students: “I read news headlines and blogs on my smartphones all day long. I try to avoid long texts if I can.” The “reading avoidance” phenomenon is even more troubling, and we are beginning to see the consequences of this alarming trend. If students develop a habit of reading short texts such as blogs, how can they concentrate on reading serious materials for learning? In this constantly connected world, students must learn how to exercise self-control in order to be successful learners.

The younger generation is accustomed to instant information access. For libraries to be relevant, they must redesign their services (Bomhold, 2013). People may argue that too few students use their smartphones for academic purposes to justify libraries dedicating resources for

mobile users. However, if you ask young people today about information access, most of them will point to mobile devices such as smartphones or tablets (Nicholas et al, 2013). It is important for libraries to leverage the strengths of mobile technology and to balance traditional services with mobile delivery. Even though many mobile users will use desktop or laptop computers to access library resources, they will benefit from the availability of mobile-friendly library services. When targeting users on the move, information professionals should be aware that the needs and behaviors of smartphone readers are significantly different compared to users of fixed devices, and should provide services in a mobile-friendly way. It is also important to promote our services on social networks, given the social nature of mobile information (Walsh, 2012).

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Rethinking Assessment: Information Literacy Instruction and the ACRL Framework

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INTRODUCTION

In recent years, information literacy instruction (ILI) has become an increasingly important part of the work of university librarians (Budd, 2012), and assessment of ILI sessions and stand-alone courses has become essential as libraries demonstrate the efficacy of the services they offer to university stakeholders and accreditation teams (Sobel & Sugimoto, 2012). In addition, the information gleaned from ILI assessment allows librarians to evaluate the success of their teaching strategies and adapt lessons to perceived gaps in student knowledge, thereby improving the efficacy of future sessions (Johnson, Anelli, Galbraith, & Green, 2011). ILI assessment has a function that goes beyond providing after-the-fact data to librarians and university administrators, however. Assessment is itself a learning tool that helps students understand course content and think critically about it, all the while improving chances at retention (Haugen, 1999).

Most of the types of assessment currently being used in ILI were developed to support the Association of College & Research Libraries (ACRL) *Information Literacy Competency Standards for Higher Education* (2000), which provided specific desired outcomes that could be assessed by librarians using various assessment tools. The ACRL *Standards* were replaced in February 2015, however, and the new *Framework for Information Literacy for Higher Education* (2015) places greater emphasis on student engagement with core concepts, and on questioning, collaboration, and conversation than the more discretely defined *Standards* did. Indeed, according to the *Framework* itself, the new guidelines are informed by the concept of *metaliteracy*, which “offers a renewed vision of information literacy as an overarching set of abilities in which students are consumers and creators of information who can participate successfully in collaborative spaces” (“Introduction,” para. 4). Created with the concept of metaliteracy in mind, the *Framework* is meant to help educators design ILI curriculum which “demands behavioral, affective, cognitive, and metacognitive engagement with the information ecosystem” (“Introduction,” para. 4). Knapp and Brower (2014) note that “Perhaps the single-largest difference between the previous set of ACRL information literacy guidelines and the proposed framework is the transition from a skill-based focus to one of knowledge-based learning and discovery” (p. 466). This shift—and the *Framework* itself—are not without their opponents (Dalal et al., 2015), but for those wishing to adopt the goals of the *Framework*, the shift from a focus on specific skills to one focused on the process of learning and engagement with concepts will certainly require a re-evaluation of current ILI goals and techniques.

The majority of assessment techniques used now are either objective assessments of skills or knowledge acquired, like pre- and post-tests, or summative authentic assessments such as bibliography assignments. Although both of these provide useful assessment data for administrators and library advocates, neither really helps instructors evaluate the *process* of learning.

Established assessment techniques such as class discussions do provide insight into the process of learning, however, and new techniques based on internet technologies are being developed to allow students to become actively engaged with their own learning. Objective and summative assessments still have a place in ILI, but an analysis of current assessment strategies shows that they generally lack the ability to engage students deeply in a collaborative process of learning, as is encouraged by the ACRL *Framework*. In order to design assessment exercises that align with the learning goals of the *Framework*, information literacy instructors will also need to draw from a variety of contemporary, collaborative educational tools and practices, such as guided group discussions, online discussion boards, and social media platforms.

KNOWLEDGE PRACTICES AND DISPOSITIONS IN THE ACRL *FRAMEWORK*

The ACRL *Framework* is made up of six “frames,” or “interconnected core concepts”: Authority is Constructed and Contextual; Information Creation as a Process; Information Has Value; Research as Inquiry; Scholarship as Conversation; and Searching as Strategic Exploration (2015, “Introduction,” para.2). Each of these frames is illustrated with a set of *knowledge practices*, which are “demonstrations of way in which learners can increase their understanding of these information literacy concepts,” and *dispositions*, which “describe ways in which to address the affective, attitudinal, or valuing dimension of learning” (2015; “Introduction,” para. 2). The previous ACRL *Standards* certainly engaged some of these core concepts, and current assessment strategies also evaluate some of the knowledge practices and dispositions described by the *Framework*. However, the *Framework* is meant to define information literacy as “extending the arc of learning throughout students’ academic careers” and its focus on engagement, reflection, and metaliteracy does require a certain amount of rethinking of current ILI practices. Specifically, the *Framework* asks faculty and librarians to “create wider conversations about student learning, the scholarship of teaching and learning, and the *assessment* of learning on local campuses and beyond” (2015, “Introduction,” para. 6, emphasis mine). How various assessment techniques support, or fail to support, specific knowledge practices and dispositions described in the *Framework* is discussed below.

CURRENT ILI ASSESSMENT STRATEGIES

ILI assessment is often discussed as a part of outcomes-based education, wherein the learning goals of the students in the ILI session are articulated in advance and assessed and evaluated after the session (Flynn, Gilchrist, & Olson, 2004). Gilchrist (2009) explains that outcomes-based educational theory was first applied primarily to K-12 education, but that the focus on the skills students needed to

learn that came from widely adopted guidelines like the ACRL's *Information Literacy Competency Standards for Higher Education* led to an increased focus on student learning outcomes that could be measured with ILI assessment. Whitlock and Navanati (2013) reinforce the need to articulate clearly defined, specific, observable, and measurable learning outcomes based on the ACRL *Standards* before choosing assessment activities. McMillen and Deitering (2007) explain that even though the focus for assessment at Oregon State University has shifted to "learning-focused assessment" (p. 62), the process of designing ILI assessment there still begins by choosing performance indicators from the ACRL *Standards* and then designing assignments to test how well the students have acquired the skills in question (p. 67). From the work of these and other researchers, we can gather that many of the ILI assessments currently in use are based on specific learning outcomes identified in the now-replaced ACRL *Standards*, which describes specific, measurable information literacy skills that college students should have, instead of a general critical disposition towards information such as the newer ACRL *Framework for Information Literacy for Higher Education* proposes. Data obtained from outcomes-based assessment cannot be given up; the most recent reports from the ACRL's own Assessment in Action (AiA) program ask participating institutions to create outcomes-based assessments based on the ACRL *Standards* to demonstrate library value to university administrators and stakeholders (Hinchcliffe, 2015). Nevertheless, a deeper engagement with the process of student learning will require additional assessment strategies that better support the collaborative, reflective, and ongoing learning goals of the *Framework*.

FORMATIVE VERSUS SUMMATIVE ASSESSMENTS

Scholars of education and assessment make a distinction between *formative* and *summative* assessments. According to Whitlock and Navanati (2013), "Formative assessments happen while the learning activity is taking place, and summative assessments happen at the end of the learning activity" (p. 34). Researchers are divided on which is preferable. Dunaway and Orblych (2011) claim that by using formative assessment exercises, instructors can better understand the skills of their students and can adjust teaching strategies to address problems as they arise. Sobel and Sugimoto (2012) note, however, that the most popular tools for assessment are worksheets and quizzes given to students after an ILI session, which are summative assessments that can be used to determine what students have learned from a particular session. Similarly, Bryan and Karshmer (2013) found that by using a pre-test before and a post-test after one-shot ILI sessions, they were able to gather useful data about the specific skills and knowledge students acquired in ILI sessions. The major benefit of summative assessment is that it can provide quantifiable data about specific skills attained by students. As a

learning tool, however, it cannot be used for “course correction” or adaptive instruction; any insights it provides will only be available after the students are gone. Even if students receive the results of their summative assessments, there is little time for self-reflection and little place for collaborative learning. Formative assessment, on the other hand, allows “students [to] become active participants with their instructors, sharing learning goals and understanding how their learning is progressing, what steps they need to take and how to take them,” which aligns nicely with the goals of the *Framework* (Stull, Varnum, Ducette, Schiller, & Bernacki, 2011).

OBJECTIVE, PERFORMATIVE, AND AUTHENTIC ASSESSMENT

Assessments can also usually be classified into one of three groups: *objective*, *performative*, or *authentic*. Whitlock and Navanati (2013) describe objective assessment as “focus[ing] on what students know, attempting to measure knowledge acquisition as a proxy for skill acquisition” (p. 34). Multiple-choice post-session quizzes are a typical objective assessment used in ILI. Performative assessment is assessment that tests a student’s ability to perform a task, usually in a simulated situation such as filling a hypothetical information need. An authentic assessment measures the student’s ability to apply skills learned in a real-world situation, often by compiling a bibliography for an actual research paper. Although Whitlock and Navanati (2013) make a distinction between these two types of assessment, across the literature performative and authentic assessments are often collapsed into one category of “performance-based assessment” or simply labeled as authentic assessment. Any of these assessment strategies can be *formal* or *informal*; formal assessments allow data to be “gathered and saved,” and informal ones allow data to be collected “but not stored for later analysis” (Whitlock & Navanati, 2013). Likewise, these types of assessments can be done at any time, either formatively or summatively, although they are most commonly used at the end of a course to capture data about the achievement of learning outcomes in the ILI session or course. Sobel and Sugimoto (2012) find that objective assessment is still the most common, but examples of performative and authentic assessment are relatively widespread in recent literature as well. Mery, Newby, and Peng (2012) use authentic assessment of student bibliographies for an English course to determine the efficacy of online ILI, and Holliday et al. (2015) find that by assessing authentic student work with a defined rubric, they can capture useful data about information literacy skills across the curriculum at their institution. Although performative and authentic assessments do allow students to demonstrate the application of skills covered in a course or session, they do not provide insight into student thought processes, nor, in most cases, do they provide opportunities for reflection or collaboration.

Most of the literature about various types of assessment is still based fairly strictly on the learning outcomes defined by the 2000 ACRL *Information Literacy Competency Standards for Higher Education*, and so it is somewhat difficult to determine which of these strategies would best support student learning according to the newer *Framework for Information Literacy for Higher Education*. What is clear about almost all of these studies, however, is that the assessment is done to determine the efficacy of the ILI, and different types of assessment tools are discussed in terms of accuracy in measuring student learning outcomes. What is rarely discussed is which of these tools contributes the most to those same outcomes, although the idea of assessment as a learning tool, and not just a tool to measure learning does appear from time to time in the literature. Hill and Kendall (2007) found that a qualitative analysis of an authentic assessment in the form of a mini clinical evaluation exercise showed that the formative assessment had a positive effect on undergraduate medical student learning, especially in terms of student motivation and attention.

ALIGNING ASSESSMENT STRATEGIES WITH THE *FRAMEWORK*

An analysis of how assessment strategies support the goals of the ACRL *Framework* for student learning should begin by looking at how assessment itself contributes to the process of learning and discovery. As stated above, summative assessments provide important information about the overall success of completed sessions or courses, and they can be very useful in demonstrating the significant contributions of the library to the overall university mission. Nevertheless, assessments meant to contribute to the process of learning, instead of measuring the outcome of learning, would need be formative by design. Since the concept of scholarship as a conversation and a collaborative process is central to the *Framework*, the assessment tools identified here—discussion boards, guided group discussion, and web 2.0 technologies—are all collaborative strategies. These strategies overlap to a certain degree, but they also have unique characteristics that make them well-suited to support the learning goals of the ACRL *Framework*.

GUIDED GROUP DISCUSSION

The advantages of discussion as a teaching strategy are well-known, and many of these advantages are aligned with the goals of the ACRL *Framework*. Brookfield and Preskill (2005) note that among other advantages, discussion “helps students recognize and investigate their assumptions,” and “develop habits of collaborative learning” (p. 71). As the assessment is done formatively during the activity itself, it provides ample opportunity for adaptive instruction. Assessment of class discussion is often fairly informal and relies on instructor notes and observations,

but more formal analyses are possible. Notes and observations can be collected, coded, and analyzed qualitatively to provide data for later assessment of library services. The analysis of a class or small group discussion would use techniques similar to those used for the qualitative analysis of a focus group discussion, which are commonly found in ILI literature. The use of focus group discussion for social research has some distinct advantages that are particularly useful for a study of assessment of ILI sessions. Babbie (2013) states that group discussion can be a rich source of information for researchers since “group dynamics frequently bring out aspects of the topic that would not have been anticipated by the researcher and would not have emerged from interviews with individuals” (p. 157). In addition, group discussions of ILI sessions have demonstrated their ability to capture information about student thought processes that could not be captured using other methods (Markey et al., 2008; Dominguez-Flores & Wang, 2011). Several information dispositions identified by the ACRL *Framework* could be cultivated by such discussions, such as developing “an open mind when encountering varied and sometimes conflicting perspectives,” valuing “intellectual curiosity,” and seeking “multiple perspectives during information gathering and assessment,” to name only a few (2015, “Authority is Constructed and Contextual, para. 3; “Research as Inquiry,” para. 4).

In addition to instructor observations and notes, discussion audits and logs can also be used to assess student learning in a group discussion, and as written assessments they can be collected, coded, and analyzed qualitatively to provide additional data for instructors and administrators. According to Brookfield and Preskill (2005), discussion audits are short written reflections on class discussions in which students note assumptions challenged, areas of confusion, and important points (p. 440). Discussion logs are similar, but shorter, and ask students to note what they learned in the discussion that they were unaware of before, what they can do now that they could not do before, and what they feel competent to teach to someone else now that they could not before (p. 444). Discussion audits and logs can be used either formatively or summatively, depending on the format of the session(s) or course, and therefore can provide a complement to the formative assessment already taking place during the discussion.

ONLINE DISCUSSION BOARDS

Already commonly used in distance learning, discussion boards provide an excellent opportunity for formative assessment of student learning, and a notable amount of literature is available on the topic of the use of discussion boards in university teaching and in ILI. According to Brookfield and Preskill (2005), “the privacy, relative isolation, and reflective space associated with asynchronous online learning enhance the development of genuinely individualistic, critical thought” (p. 375). Moreover, given the right circumstances, they find that in

discussion board posts, “students are more likely to articulate a view that reflects their own individual thought-out position” (p. 375). Arguably, these characteristics of discussion board practice support the knowledge practice described in the ACRL *Framework* as “[acknowledgement that students] are developing their own authoritative voices in a particular area and [that they] recognize the responsibilities this entails, including seeking accuracy and reliability, respecting intellectual property, and participating in communities of practice” (2015; “Authority is Constructed and Contextual,” para. 2). AlJeraisy, Mohammed, Fayyumi, and AlRashideh (2015) note a number of learning advantages of online discussion boards which support this supposition, such as fostering community building, promoting research and reflection, and allowing for the inclusion of guest experts. Likewise, Matheson, Wilkinson, and Gilhooly (2012) found that discussion board use “promot[ed] questioning and sharing of information, diminished competition, and promoted collaboration” (p. 266). As assessment tools, discussion boards provide the same formative advantages of class discussion, giving instructors the ability to course correct and giving them insight into student learning processes.

Because they are written, discussion boards also provide additional opportunities for both formative and summative assessment. In their study of discussion boards in ILI, Stull et al. (2011) note that “the online environment presents opportunities for formative assessment to be conducted more efficiently by decreasing student feedback time” and that it “facilitat[es] peer-feedback and collaboration.” (p. 32). Summative assessments of discussion board posts have also been successfully conducted using content analysis (Song & McNary, 2011; AlJeraisy et al., 2015). In an analysis of discussion board use in ILI, Walton and Cleland (2014) found student contributions “embodying attributes of information literacy capability, demonstrating discursive competence in evaluating information which may lend themselves to summative assessment” (“Conclusion,” para. 1).

SOCIAL MEDIA PLATFORMS

A number of Web 2.0 tools such as Facebook, blogs, and Twitter also have the potential to be used for ILI and ILI assessment. Although more research needs to be done on the pedagogical uses of social media applications, Cerna (2014) noted an increased acceptance of social applications for both communication and assessment in higher education in recent years. Drawing on the same concept of metaliteracy so central to the ACRL *Framework*, Witek and Grettano (2014) integrated Facebook Groups use in a rhetoric and social media course designed around information literacy. The Facebook Groups were used as an additional means of conducting discussions and assessing student understanding of core concepts. According to Witek and Grettano, the Facebook Groups provided

“students [with] tools and a critical framework within which to understand and recover agency in their interactions with information in [social media] environments” (p. 197). Since the Facebook Groups were used all semester, they functioned well as formative assessments and allowed instructors to adapt assignments and lectures to student comments and questions. Witek and Grettano also performed rhetorical analyses of the posts in their entirety as a summative assessment when the course was completed. Witek and Grettano found evidence of several learning outcomes of the ACRL *Standards* in student posts, but it also seems that the use of Facebook Groups is aligned with the “Information Creation as a Process” frame of the ACRL *Framework* (2015), and encourages several of the knowledge practices associated with that frame, such as “articulat[ing] the capabilities and constraints of information developed through various creation processes,” “assess[ing] the fit between an information product’s creation process and a particular information need,” and “recogniz[ing] the implications of information formats that contain static or dynamic information” (“Information Creation as a Process,” para. 3). Similar to discussion boards, Facebook Groups could provide an assessment opportunity that is also a dynamic teaching strategy, and a demonstration of an information literate practice.

In a study of a student blog used as part of an information literacy module, Cmor (2009) found that the student blog had the potential to become a “user-created reference and instructional tool, which students could go back to and consult when researching for their end of term papers” (p. 399). Since students and the instructor read, posted, and responded to the blog throughout the semester, it also allowed for formative assessment of student learning. This type of activity supports the ACRL “Scholarship as Conversation” frame. In particular, it allows students to demonstrate knowledge practices such as “contribut[ing] to scholarly conversation at an appropriate level” and “critically evaluat[ing] contributions made by others in participatory information environments” (2015, “Scholarship as Conversation,” para. 3). Twitter hashtags have already been used in information literacy instruction (Alfonzo, 2014), and it may be possible to design an assessment around the creation and collection of these metatags. Such an assessment would support the “Searching as Strategic Exploration” frame, and would allow students to employ the knowledge practice “understand[ing] how information systems are organized to access relevant information” and “manag[ing] searching processes and results” (2015, “Searching as Strategic Exploration,” para. 3).

CONCLUSION

According to Knapp and Brower (2014), “skills-based instruction only has temporary value to the learner, but the threshold concepts of the ACRL *Framework* promise a broader, more adaptive understanding of the nature of information, and better lifelong learning as a result” (p. 467). After fifteen years of basing our assessment of ILI on

the *Information Literacy Competency Standards for Higher Education* and the skills demanded by those standards, the *Framework* presents an exciting new way of looking at information literacy and entirely new challenges to teaching it. Class discussions, online discussion boards, and social media platforms are all being used for ILI already, and therefore using these tools for assessment is really a matter of looking at them through a new lens rather than inventing a new technique. With the ACRL *Framework* as a guide for ILI assessment design, the line between the teaching practice and the assessment strategy becomes blurred, but that blurring is actually part of the *Framework's* objective in encouraging students to collaborate and to reflect on their own learning. Although evidence-based data drawn from objective, summative assessments will still be necessary for library advocacy, accreditation reports, and other purposes, the *Framework* specifically asks us to recognize the “greater role and responsibility in creating new knowledge” that students have now, and it challenges librarians and faculty to design new curricula, assignments, and assessments that enlarge understanding and enhance engagement with concepts. Group discussion, online discussion boards, and social media platforms are just a few of the tools that can be employed as we rethink how we assess student learning and contribute to the very learning outcomes we are assessing. More research is needed on how these and other assessment strategies can promote the goals of the ACRL *Framework* while still providing valuable data to administrators, and the areas of learning analytics and educational data mining show great promise for capturing this type of data. (Ming and Ming, 2015). The *Framework* reminds us that “scholarship is an ongoing conversation in which information users and creators come together and negotiate meaning” (2015, “Scholarship as Conversation,” para. 1). Now that the *Framework* has been adopted, we can begin the conversation about how to align ILI assessment to its goals.

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Research Trends & Emerging Technologies for Genealogists

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Research Trends & Emerging Technologies for Genealogists

Cover Page Footnote

Thank you Dr. Scott Walter for your guidance and inspiration; thank you James Brancato, Karen Moffat, Jane Theissen, and Ruth Ann Yorg for your feedback and support during the early stages of my research; and thank you Teresa Sweeney, for your editorial expertise. Finally, I would like to thank my husband David, and my children Matthew, Mary, and Miranda, for their encouragement and love each and every day.

INTRODUCTION

Genealogy, or the study of ancestry, is generally considered a hobby that is rapidly growing in popularity world-wide, especially in the United States, which experienced a large influx of immigrants between 1870 and 1930. What once was a nobleman's pastime of studying his pedigree soon evolved into a leisure hobby that knows no boundaries of wealth, class, or origin. Everyone has a family tree, and anyone can be a family historian. From writing down one's ancestors on a family tree chart to discovering their vital records (i.e. birth, marriage or military), the 20th century genealogist was a researcher of their own ancestry.

In the 20th century, most genealogists conducted their research by interviewing relatives and visiting repositories to inquire about their ancestors. Travel to these sites was almost a necessity, but genealogists were often hindered by the geographic (and sometimes political) boundaries in which they lived. Travel out of their region was also cost prohibitive.

When they could access original documents, they relied on vital records, city/county directories, and church/cemetery records to reveal new information or provide a clue to a new individual or branch of their family tree. Old newspapers and periodicals could also reveal the socio-economic reasons of an era for migration to, and around, the United States. Additionally, books and journals would inform a genealogist on how to research their roots and organize the data.

Then came the information age with computers and the Internet. By the late 1990s, home computers and Internet access were rising in popularity. Genealogy software and websites appeared, providing more means to facilitate research. By the early 21 century, portable electronic devices became common place, allowing for research and information sharing anywhere, any time. Hence, the modern day genealogist is born, but constantly evolving. Longtime genealogist and librarian Jane Theissen (personal communication, March 3, 2015) noted that "there is a wealth of information available to genealogists today [and] it is becoming easier to find, be it online or physically. One has to be careful not to become overwhelmed!" Yet, very few recently published scholarly works address the rise in use of these technologies.

Greenwood (2000) published a scholarly book that included a list of the latest technologies at that time, including word processing, electronic mailing lists, newsgroups, and Internet chat sessions. This guide to genealogy is now fifteen years old. Greenwood, also aware of how quickly technology can evolve, concluded that "greater and more wondrous changes are yet to come" (p. 159).

Two years later, a study by Southwell found that a large number of visitors to the website for the Western History Collections at the University of Oklahoma were directed there by search engines such as Yahoo and Google: "The statistical reports indicate that the WHC Web pages are typically found through key-word

and subject-phrase searches, as opposed to direct searches for an institution's pages" (2002, p. 99). This shows that users are using the Internet for genealogical research, and they are more likely to conduct keyword searches than seek out a specific collection online. Users might know what they want, but not how to find it.

As Internet usage increased, social networking websites were formed. Smith wrote about social networking, describing it as "a way of using online resources and services to create and maintain a community of individuals who share common interest" (2009, p. 7). He also touched upon blogs, wikis, photo sharing, and podcasts. Genealogists are still discovering technologies, and how they can use them for research purposes. They are not necessarily a consumer anymore, but instead a producer of the information. They intend to share their knowledge with others for the greater good of the community, and new tools of the trade allow them to do this effortlessly.

In this age of all these emerging technologies, genealogists' information seeking behaviors and needs are evolving and adapting at a greater speed than ever before. Genealogists can locate information relevant to their family search with just a few clicks on a website. They can download and/or purchase digital images of documents such as birth records, cemetery records, and census records. The number of online resources can be overwhelming, and care must be taken to ensure the provenance and authenticity of the information they discover.

The research concentrates on the current needs and information seeking behaviors of early 21st century American genealogists. America is the metaphorical melting pot of the world, where people from all over come to live and seek a better life. Modern day genealogists are using new tools and technologies of the information age to research their ancestors' origins and to track their migration around the United States. Geographic and political boundaries fade as records are digitized, and anyone can click on a peripheral or swipe a screen to access these records.

Particular areas of focus in this study include traditional tools and methods utilized by genealogists while engaging in family history research, and an analysis of emerging research trends and technologies that are popular with today's genealogy community. The latter topic is of importance because libraries, archives, repositories, and other keepers of records and information need to understand how genealogists search and what methods they rely on in the first part of the 21st century. This data is needed to better serve the community of genealogists.

LITERATURE REVIEW

There are several significant scholarly studies regarding the information seeking behaviors and needs of genealogists and, on a broader scale, historians. Many of these studies were conducted in the last fifteen years, and are primarily scholarly journal articles written by university professors who work in the field of information science. These professors not only evaluate the work of other professionals, but they themselves conduct relevant research in their field. Their methodologies consist of interviews and surveys of groups that varied in size from ten people (Duff & Johnson, 2002) to 258 people (Tibbo, 2003), although most studies focused on groups of 24-30 people.

This literature review also includes some professional (as opposed to scholarly) articles and reference books, mostly by librarians and historians who have significant knowledge of genealogical research. Their writings often provide insight into the hobby, its history, and relevant search techniques, but might not offer any new ideas or original research studies.

Null (1985) writes that a genealogist's main goal is to trace their family roots. Written genealogies (lists of related persons) can be found in the Old and New Testaments of the Bible. Prior to modern day record keeping (Molto, 2009), usually only the rich and noble kept documentation of their ancestry as proof of their pedigree. Archivists and historians did not look highly upon genealogists in the 1800s and early 1900s, "regarding them as people who contribute little or nothing to our knowledge of [a] country's past" (Rubincam, 1949, p. 333).

Around 1930, genealogy began to emerge as a "scientific" field of study (Molto, 2009, p. 1916) and increased in popularity in the United States, possibly brought on by the Great Depression at a time when Americans felt a "loss of purpose" in life (Null, 1985, p. 30). There was another surge in the number of genealogists after the 1976 telecast of *Roots*, which inspired new interest in one's ancestry. In 2004, the BBC series *Who Do You Think You Are?* debuted, followed by the American version in 2010. As a result of these shows, "history becomes real, living and relevant" (Barratt, 2008, p. 6). By 2005, 73% of Americans had developed an interest in genealogy and their family history (Herskovitz, 2012). Academics, historians, archivists and librarians begin to take genealogists and their research seriously.

Since the dawn of the digital age, many studies have emerged on the information seeking behaviors of genealogists. In a study of historians in general, Duff and Johnson (2002) concluded that researchers rely heavily upon primary sources, indexes, and bibliographies. Genealogists usually begin their search with a name, so that strategy is extremely important. They took this a step further in 2003 when they published the very first study that focused solely on genealogists' information behaviors and needs. They interviewed ten experienced genealogists,

and found that they preferred to search for information in the following order: names, dates, places, subjects, and events. They also suggested three steps in gathering information: gather names, collect further details, and learn about the society and time period of the individual. The steps were not linear, as genealogists often move from one individual to another on their family tree. Duff and Johnson found that genealogists are confident using finding aids and Internet resources, but they also rely on colleagues and social networks for information seeking.

Genealogists may feel that the relevancy of their research is being questioned by librarians/archivists, and therefore, they draw on their own experiences (or colleagues' experiences) to conduct their research (Darby and Clough, 2013). McKay (2002) concluded that "many archivists would profit from cultivating and respecting [genealogists] and collaborating with them to preserve our cultural heritage" (p. 31).

Duff and Johnson's study influenced others to conduct research on the behaviors of genealogists. Yakel (2004) interviewed 29 genealogists about their information gathering practices and management. Her study illustrates that the process of research is related to seeking meaning in the data. Yakel refers to Duff and Johnson's stages of research, but she also explores the idea that genealogists transform from information seeking users to creators of meaning (i.e. they find meaning and satisfaction in their research). The article breaks down the role of a genealogist into three groups: seeking information, seeking connections, and seeking meaning. Yakel is often cited by others for examining how genealogists seek meaning in their research and then manage the information that they collect.

Newer studies often refer to the groundbreaking ideas first expressed by Duff and Johnson (2003) and Yakel (2004), but they also develop their own schools of thought. Yakel and Torres (2007) detail how genealogists change their information seeking behavior to fit their needs. Fulton (2009) found similarities in the way genealogists acquire information, and concluded that "information sharing is an important feature... [which supports] learning as well as achievement in locating one's ancestors" (p. 753). Studies by Skinner (2010) and Darby and Clough (2013) refer to Marcia Bates' concept of berrypicking, and their research enforces the notion that genealogists do in fact pick and choose which resources to utilize. Darby and Clough formulated an eight phase model of the research process and found that the phases were not linear, just as Duff and Johnson (2003) did in their study. Genealogists jump around from stage to stage.

Now that we have looked at the information seeking behaviors of genealogists, what are their information seeking needs? A genealogist's greatest need is access to information, whether it be in the form of paper manuscripts, microfilm or online resources. In this digital age, a great many genealogists will begin their search on a family history website such as Ancestry.com or FamilySearch.org. They will type in a name and see if they can locate common

ancestors. However, many resources are not available online, and genealogists still rely heavily on library/archival finding aids, primary resources, vital records, and even creating their own systems and networks to fill their needs. This need for access existed long before the digital age. Nearly 70 years ago, Rubincam (1949) called for the centralization of records amongst “state archival agencies, local historical societies, and country court houses” (p. 336). Years later, Yakel and Torres (2007) still felt that access to records was an issue, and Duff and Johnson (2003) felt that archival systems needed improvement to better assist genealogists in their research.

There are also some weaknesses, biases, or gaps in the literature. Studies by Yakel (2002) and Tibbo (2003) both state that user education in archives and libraries needs improvement. Yakel notes that librarians should teach users more about primary resources, and Tibbo suggests that repositories should market their electronic finding aids and databases as a main tool of research to better serve genealogist’s needs. Another issue is the lack of current (i.e. post-2012) user studies on genealogists, as technology continues to evolve, especially with materials available on the Internet (Molto, 2009). There is a need for more studies on whether or not a genealogist’s information seeking behaviors and needs are changing along with the technology.

Additionally, some researchers feel a definite need to reformulate their surveys. In her survey of manuscript users at the University of Oklahoma, Southwell (2002) indicated that future surveys at her institution should have “fewer, tightly focused questions with sub-questions that help clarify responses” (p. 103). She felt that her survey highlighted how much there is still to learn about user needs and behaviors. In the future, Skinner (2010) would conduct surveys for a longer time period, and spend more time actively recruiting participants. Darby and Clough (2013) felt that future research would validate their eight phase model of research activity, but that further exploration was needed of the “causative factors” behind user behaviors that might link together the phases (p. 83).

METHODOLOGY

Since there is a lack of current studies regarding emerging technologies and tools for genealogical research, an original survey was created to address this issue. Preliminary interviews were conducted with four genealogists, generating a short list of current technological trends. Then a thorough questionnaire was created to address both traditional and new research methods. Many of the websites cited in the survey were inspired by Molto’s (2009) exhaustive list of online genealogical resources. Since this new survey had an intended audience of genealogists of all research levels and degrees of experience, a select number of Internet sources were

chosen for inclusion in the survey. The resulting list was a combination of Internet sources recommended in the informal interview process, this author's own knowledge of genealogy websites, and some of the resources listed by Molto.

The twenty-eight question survey was created on the website SurveyPlanet (see the Appendix). The link to the survey was shared via email and Facebook. For email distribution, the survey was sent the following ways: directly to a handful of known genealogists, via the Autocat listserv (an electronic discussion list for library catalogers), and via the Libsup listserv (an electronic discussion list for library support staff). The survey was also shared on this author's personal Facebook page, the Ancestry.com Facebook page, and the following closed Facebook group pages: ALA Think Tank and U.S. Midwest Genealogy Research Community. All recipients were encouraged to share the link, so the total number of methods used to share the survey are unknown.

The survey included an introductory paragraph outlining its purpose. Users were notified that they must be at least eighteen years old to participate, and that while the survey focused on American genealogists researching their roots, the survey was open to those living outside the United States.

Four hundred and twenty-five people responded to the survey within a six day time frame. A few basic demographic questions were included. Other preliminary questions asked the genealogists to describe their level of knowledge and to identify how long they have been researching. The survey moved forward with simple yes or no questions, asking the respondent about different sources and tools they might own and/use in their research. The second half of the survey mainly included detailed multiple choice questions regarding specific genealogy websites, software, apps, and other emerging trends, as identified in the four initial informal interviews. The last question was left open for additional comments. SurveyPlanet tabulated the results and generated a color-coded pie chart for the results of each question.

The number of participants (425 total) was astounding, considering that many of the published studies analyzed earlier in this paper had a much smaller pool. To alleviate the issue of having to omit surveys due to users skipping questions, the survey was set-up so that each question was required. Respondents were forced to answer each question (though many of the answers included "none" or "other" responses) in order to complete the survey.

DISCUSSION

The purpose of the survey was to identify the research trends and emerging technologies that genealogists are using in the year 2015. Since the survey itself was created on an Internet platform (the website SurveyPlanet) and shared via

technologies such as email, electronic discussion lists, and Facebook, the participants were expected to have some knowledge of new technologies.

RESULTS

The largest age group of respondents was 55-68 (44.2%), followed by 31-54 (37.4%), 69+ (12.5%), and 18-30 (5.9%). This corresponds with data collected by Sinko & Peters (1983), Yakel (2004), Yakel & Torres (2007), and Fulton (2009), and indicates that it is generally those over the age of 47 who engage in genealogical research. However, the widespread use of the Internet does make it more appealing for younger adults.

The majority of respondents currently live in the United States (95.8%). When asked to describe their level of knowledge as a genealogical researcher, 9.9% identified as a beginner, 48% as intermediate level, 30.8% as advanced, and 11.3% as professional/expert. Almost half of the respondents (48.5%) have been involved in genealogical research for more than fifteen years, indicating that many seasoned and experienced genealogists had taken part in the survey.

The following five questions required simple yes or no answers, and were used to determine a mix of traditional and more technologically advanced sources that a genealogist might use. A majority of respondents indicated that they own print copies of genealogy books (78.8%), subscribe to print journals, periodicals or newsletters (52.9%), use genealogy software on their computers (79.5%), and belong to genealogical societies and other clubs/organizations (67.8%). Surprisingly, a little less than half (49.6%) use genealogy-related apps on their smart phones and tablets, but this number is sure to rise as the sale of these electronic devices steadily increases.

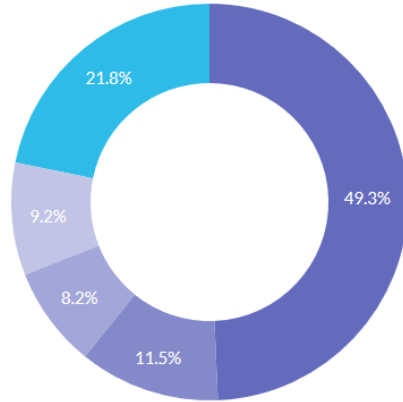
The survey continues with several questions that include detailed answers. These questions determine which specific websites, products, and other technologies genealogists utilize in their research. The majority of respondents use Ancestry's Family Tree Maker software to manage their family tree electronically (see Figure 1). Ancestry was also the favorite amongst paid subscription-based Internet sites (see Figure 2). For the question "Which genealogy websites are your favorite for free content?" the answers were split between nine websites and the "other" option. Find A Grave's website was the most popular at 22.9%, with a narrow lead over the Family Search website at 22.8% (Figure 3).

Figure 1

Q11

Please indicate which genealogy software you use to organize your family tree (choose all that apply):

Multiple Choice



Choices

Totals

● Family Tree Maker (Ancestry.com)

258

● RootsMagic

60

● Legacy Family Tree

43

● None

48

● Other

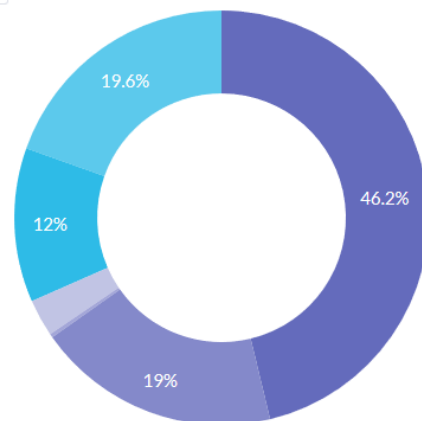
114

Figure 2

Q12

Please indicate any paid subscription-based Internet sites you subscribe to (choose all that apply):

Multiple Choice



Choices

Totals

● Ancestry

319

● Fold3

131

● One Great Family

2

● World Vital Records

20

● None

83

● Other

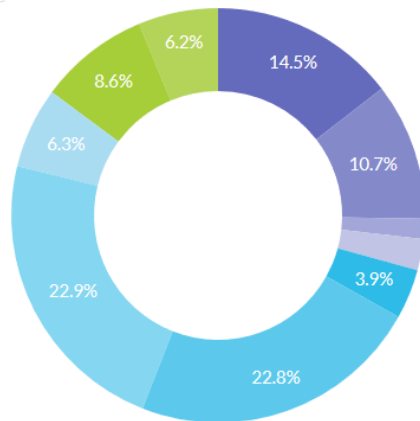
135

Figure 3

Q13

Which genealogy websites are your favorites for free content? (choose all that apply)

Multiple Choice



Choices

Totals

● Ancestry

221

● National Archives (US)

163

● National Archives (UK)

24

● My Heritage

37

● Genealogy.com

59

● Family Search

347

● Find A Grave

348

● Ellis Island

96

● Cyndi's List

131

● Other

95

To gauge whether or not the respondents were active participants of online forums (and not simply viewers of information), they were asked if they had ever posted a comment or replied to an inquiry via an online discussion forum. 78.1% replied yes.

One of the newest emerging trends in genealogical research is DNA testing. Barratt called it a “major growth area in family history research techniques” (2008, p. 1026). These tests allow a person to trace their lineage to a particular ethnicity, even “mapping human population movements across the globe” (p. 1026). Ancestry.com recently launched their own DNA testing kit and analysis. Ancestry.com CEO Tim Sullivan explained why the company had launched its kit:

As we see it, there are two markets for this sort of thing, one is the people who already love genealogy and the other is those who are simply saying, 'Tell me who I am,'" says Sullivan. "Family history is never really done. With every generation you go back, you have that much more context for your own story. (as cited in Della Cava, April 2, 2015, para. 4)

In the survey, 57.1% of genealogists reported buying a DNA testing kit online. Ancestry's service was the most popular (24.1%), followed by Family Tree DNA (19%), and 23andMe (8.5%). 5.5% reported using a different online service

for DNA testing, while a minority of 42.9% had not tried DNA testing as of the time of the survey.

Genealogists were further surveyed on the tools and technologies they used. When asked if they use newsgroups, listservs, both or neither, the majority used neither (52.9%), but a combination of both was the second most popular answer (21.4%). Users were also surveyed about blogs they read on a regular basis. 55.9% of respondents replied they regularly read blogs. Eastman's Online Genealogy Newsletter was the most popular (23.8%), followed by Armchair Genealogist (6.1%), Everton Publishers Genealogy Blog (4.3%), and Hidden Genealogy (1.8%). 19.9% followed other blogs.

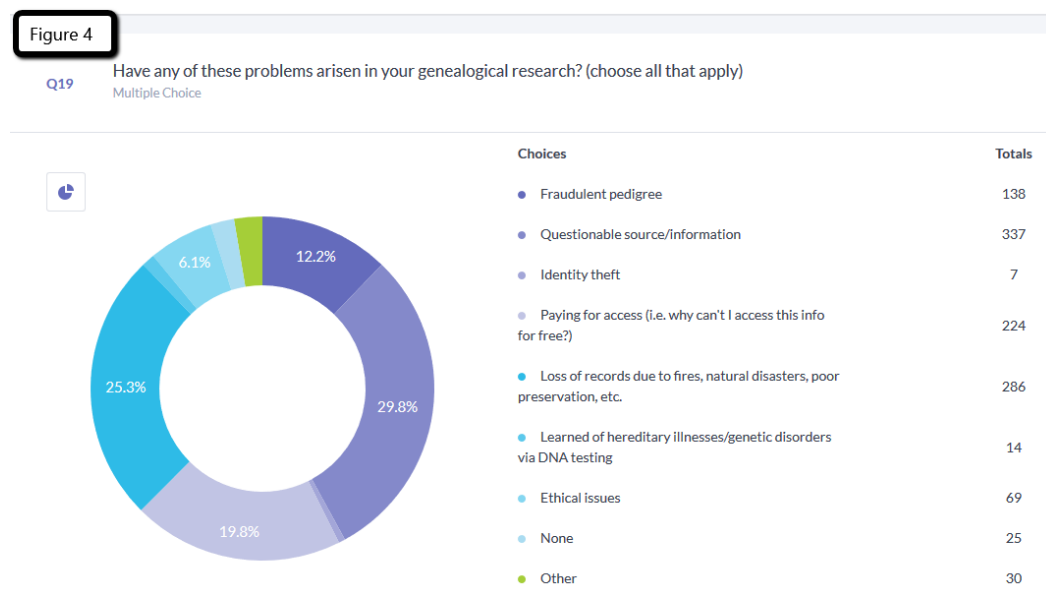
To follow-up on the question regarding whether or not genealogists used apps on their electronic devices, users were asked to select the ones they use from a list. Surprisingly, 72.3% responded that they use a specific app (or one not listed on the survey), when earlier, in the yes or no question, only 49.6% replied that they used genealogy-related apps. The discrepancy in figures can most likely be explained by the fact that the follow-up question listed apps that might not be considered strictly genealogy related. Or perhaps the user did not think of one until given a list of choices.

The most popular app was Ancestry (26.7%), followed by Find A Grave (15.2%) and Everyone or One Note (13.3%). Four choices amounted to a mere 9.5% (My Heritage, RootsMagic, Trello (or other list making apps), and SmartDoc (or other image capturing apps). Zero respondents used Interviewy (a dictaphone-like app for voice recording) and WDYTIA Forum (an app that allows users to directly access the Who Do You Think You Are? online forum). Both of these products originated in the United Kingdom, which might be the reason why the respondents of this American-based genealogy survey did not utilize these apps.

Inspired by the lectures and writings of Milton Rubincam, a leading genealogical researcher of the 20th century, the next question asked genealogists to identify any problems that have arisen in their research. The purpose of this question was to ascertain what issues or road blocks genealogists are currently facing as a community. When Rubincam published a book of research related difficulties, he wanted to “help the beginning genealogist avoid the pitfalls into which we all have fallen—and some of us still do, if we are not careful” (1987, preface). Some of the main issues he addressed were similar/identical surnames, issues with dates, and fraudulent pedigrees. According to the genealogists surveyed, the current top three pitfalls are questionable source/information (29.8%), loss of records due to fires, natural disasters, preservation issues, etc. (25.3%), and paying for access (19.8%). Verification of names and dates were not addressed in the survey until question #26, but fraudulent pedigrees were a part of this question, and ranked 4th with 12.2% (see Figure 4).

Many have written about the top traditional sources for genealogical research. Tibbo's (2003) list of primary sources identified newspapers, unpublished correspondence, published pamphlets, and unpublished diaries/journals as the most important and most often used materials in libraries and archives. Molto (2009) organized sources by categories into five exhaustive, all-inclusive tables. Rubincam's (1960) collected essays from members of The American Society of Genealogists divided resources into five parts: family records, public records, institutional records, manuscripts and printed materials.

In this survey, respondents were asked three questions regarding primary and secondary sources to identify which resources they utilize the most. The first

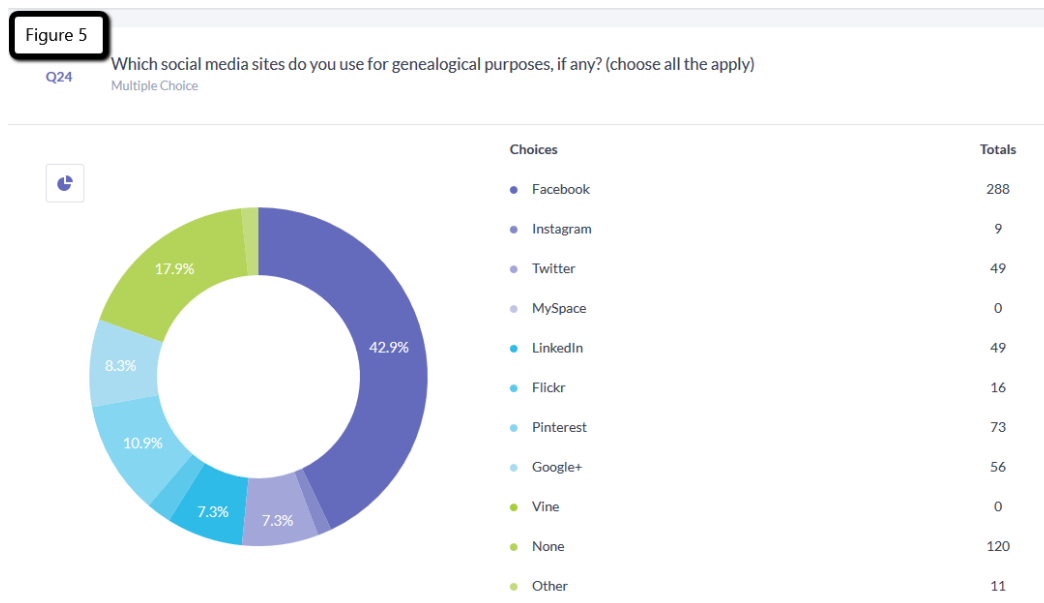


asked them to select all the traditional documents they utilize. The answers were split fairly evenly, but government documents (including census, vital & military records) had the strongest usage (16%), followed by cemetery records (15.8%), and newspapers (15.5%). The next question asked them to indicate how often they visit a library, archive or repository in person for research purposes. 52.9% visited sometimes, 24.7% visited regularly, 13.2% were high frequency visitors, and only 9.2% replied never, indicating that the majority of genealogists seek information that is not available online, and are willing to travel, if only locally, to access the information. Lastly in this series of questions, they were asked if they had ever used a finding for a library, archive or repository for genealogical research. 68.7% have used one, both in person and online. 11.5% had used an online finding aid

only. 6.6% had used a finding aid in person. 13.2% (the second largest percentage) had used neither.

Next, the survey attempted to determine if genealogists are using social media to follow genealogical topics. When asked if they did, 69% answered yes. When given a list of specific social media sites to choose from, the rate increased to 82.1%, indicating that perhaps some of the respondents did not realize that some sites they utilize are indeed considered social media. The most frequently used social media site for genealogy was Facebook at 42.9% (see Figure 5).

In order to gauge how a genealogist of the early 21st century would begin researching a newly discovered ancestor, they were asked to indicate their initial research strategy. An overwhelming majority (77.1%) replied they would visit a website such as Ancestry or Family Search and type an individual's name into a search box. 10% would ask a family member about the ancestor, 7.7% would look at published records, and 5.1% would choose another method. These numbers reaffirm suspicions that genealogists are depending more and more on online sources to conduct their research.



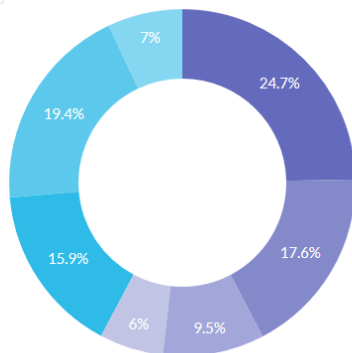
The final two questions of the survey listed many detailed answers to choose from. When asked what their biggest obstacle has been in researching their ancestry, the majority of respondents (24.7%) indicated loss of records due to fires, disasters, preservation issues, etc. The other responses were split between six other

options (see Figure 6). They were then asked if there are conditions in which it is acceptable to pay for information. 19.4% indicated that paying for access/information was problematic; 48.9% indicated that a monthly or annual membership fee for access was acceptable; 20.9% indicated that there should only be a charge when requesting a copy of a document either in paper form or via electronic delivery. It is interesting to note that many respondents later commented that this particular question did not allow for multiple answers to be chosen. This is an unfortunate oversight in the survey’s design. See Figure 7 for a breakdown of answers, bearing in mind that the results might be skewed, since users could not select multiple options or choose “other.”

Figure 6

Q26
Multiple Choice

What are your greatest obstacles in researching your ancestry? (choose all that apply)



Choices

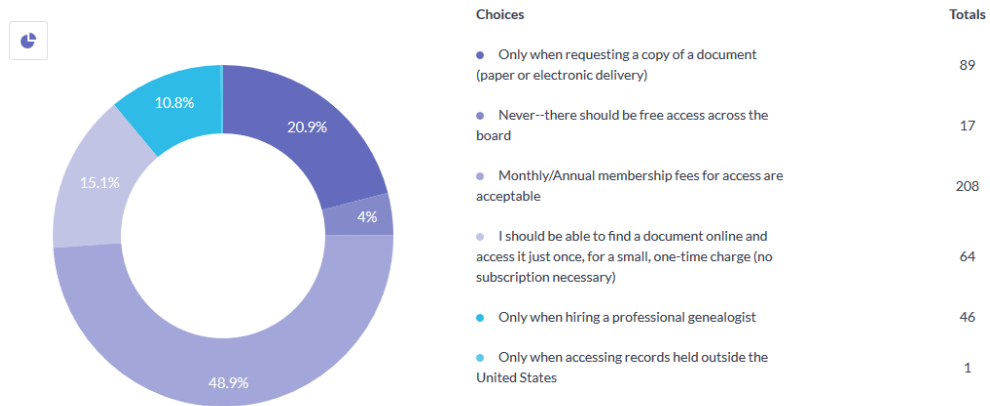
- Loss of records (due to fires, natural disasters, lack of preservation, etc.)
- Little or no access to records outside your geographic area (including international)
- Language barrier
- Relatives who won't cooperate
- Can't verify names/dates
- Paying for access/information
- Other

Totals

- 240
- 171
- 92
- 58
- 154
- 188
- 68

Figure 7

Q27 When is it acceptable to pay for information?
Multiple Choice



OVERALL FINDINGS

The survey results show that genealogists are definitely using newer technologies and tools, such as software, websites (both free and paid subscription), blogs, social media, and apps. But they are still using traditional sources, such as books and journals, and a majority of respondents belonged to genealogical societies and other clubs/organizations. They are utilizing some non-Internet sources to keep informed about topics of interest to their community, too.

There are a large number of respondents who rely on cemetery records, with Find A Grave’s website and app averaging 22.9% and 15.2% users, respectively. Out of all traditional sources listed in the survey, cemetery records (which can be obtained either in person at a cemetery’s office or via its website) accounted for 15.8% of record type usage, the highest percentage among choices for that particular question.

Digitization of records is an important cause for genealogists. Since so many records have been lost to fires and lack of proper preservation, they worry about the state of existing records that have not been digitized. Longtime genealogist James Brancato (personal communication, March 1, 2015) reflected: “It is so important to digitize the remaining records we have--for the preservation of their historical significance--before they are lost to us.”

SURVEY WEAKNESSES AND SUGGESTIONS FOR FUTURE STUDIES

It is not particularly clear from this survey if genealogists' needs are being met since they were not asked outright, but it seems likely that their needs are indeed being met, and that these newer technologies of the information age are helping them meet their needs faster, and providing many more platforms on which to conduct research. One survey respondent said, "Using technology has allowed me to find out more information in a few years than the previous family genealogist did in a lifetime." It would be helpful to formulate one or more meaningful questions regarding their needs being met, in order to further investigate the issue.

Two simple questions regarding whether or not the respondents used social media, and which social media sites they use, were accidentally omitted from the survey upon release, resulting in five people not answering those two questions. However, since the first responders were those solicited on Facebook, it is safe to assume that yes, they use social media to follow genealogical topics. It might not be clear which sites they utilize besides Facebook, but 5 out of 425 respondents missing two questions is not significant enough to skew the data.

In hindsight, there should have been a question regarding whether or not they use podcasts, and which ones are their favorites. There could also have been a more detailed question regarding which Facebook pages or groups they utilize for genealogical research. Since 42.9% of respondents use Facebook, it would be useful to compile a list of top Facebook pages/groups so that those reviewing the survey results might discover some pages/groups that they had not heard of and could now access. One respondent commented that "I did not know that some of the resources that you mentioned in this survey existed. I will be looking into some of these."

For the question regarding obstacles in research, respondents suggested additional choices for individuals who were adopted and cannot trace their blood line, and the number of records that are not made available until a certain number of years have passed. The last question regarding situations in which it is acceptable to pay for information garnered the most critical comments. Respondents requested either the ability to select multiple answers or choose "other." One final criticism of the survey noted the lack of questions regarding data storage and back-up copies.

For future studies, researchers should take these suggestions and critiques into consideration. Also, it would be interesting to find out how each respondent learned of the survey, since many genealogists shared or forwarded the link to others. If this information were provided, one would know for sure which method resulted in the most survey users.

CONCLUSION

Genealogy is no longer just a hobby. Genealogy is a process of discovering, interpreting, and sharing information. Genealogists come together as a community of information users with their own specific needs and searching behaviors. They have a wide range of skills (Skinner, 2010). They usually prefer to search for information in the following order: names, dates, places, subjects, and, finally, events (Duff & Johnson, 2003). Many researchers have conducted surveys and interviews with genealogists to learn about their information seeking needs and behaviors. Genealogists often share search strategies and use common finding aids/tools that are tailored to their specific needs. They have not been known to seek significant help from a librarian or archivist (Rubincam, 1949), and current technological advances lead to even less direct contact. Genealogists like to pick and choose their resources and methods (i.e. berrypicking). They are great at adapting to the resources at hand, whether it be print or Internet resources, or social networking with fellow genealogists.

As one of the most popular activities in the world, genealogy is not going away anytime soon. A positive affect is generated when a person partakes in a leisure hobby or other past time of significant value in their life. Users receive pleasure from their research, and therefore, become more engaged in their learning activity (Fulton, 2009), and engaged with each other. User satisfaction also increases as more resources become available (Skinner, 2010). In this day and age, genealogists want those resources to be available electronically, and they are often willing to pay for that access.

For years, researchers have known that genealogists are a distinct community with their own needs. Yakel & Torres (2007) noted that genealogists create their own social groups and networks in order to conduct research outside the confines of libraries and archives. Internet forums, blogs, and apps are bringing the community together more now than ever. These technologies, along with the increased digitization and access to documents online, are facilitating the sharing of information amongst the community.

Technology will continue to guide genealogical research, especially as researchers become aware of, and attuned to using, the latest technologies available. By using new mechanisms, genealogists will expect faster searching and more records available online and through the use of their devices. The world can be quite literally at their fingertips. Even those who do not own a computer can often find a local public library that provides free access to paid genealogy websites like Ancestry.com. The average person no longer has to wonder where they come from or what might have been a part of their lineage. With the vast amount of resources now available with the click of a button, anyone can become a researcher of family history.

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APPENDIX

Research Trends & Emerging Technologies for Genealogists Survey

1. Age group
 - a. 18-30
 - b. 31-54
 - c. 55-68
 - d. 69+
2. Where do you currently reside?
 - a. USA
 - b. Canada
 - c. Other North American country
 - d. Other
3. How would you describe your level of knowledge as a genealogical researcher?
 - a. Beginner
 - b. Intermediate
 - c. Advanced
 - d. Professional/expert
4. How long have you been involved in genealogy?
 - a. Less than a year
 - b. 1-5 years
 - c. 6-15 years
 - d. More than 15 years
5. Do you own any genealogy books (actual print copies)?
 - a. Yes
 - b. No
6. Do you subscribe to any paper journals, periodicals or newsletters?
 - a. Yes
 - b. No
7. Do you have any genealogy software on your computer?
 - a. Yes
 - b. No
8. Do you belong to any genealogical societies or other clubs/organizations?
 - a. Yes
 - b. No
9. Do you have any genealogy-related apps on your smart phone or tablet?

- a. Yes
 - b. No
10. Do you prefer researching and handling records in person or online?
- a. In person
 - b. Online
 - c. Both
11. Please indicate which genealogy software you use to organize your family tree (choose all that apply):
- a. Family Tree Maker (Ancestry.com)
 - b. RootsMagic
 - c. Legacy Family Tree
 - d. None
 - e. Other
12. Please indicate any paid subscription-based Internet sites you subscribe to (choose all that apply):
- a. Ancestry
 - b. Fold3
 - c. One Great Family
 - d. World Vital Records
 - e. None
 - f. Other
13. Which genealogy websites are your favorites for free content? (choose all that apply)
- a. Ancestry
 - b. National Archives (U.S.)
 - c. National Archives (U.K.)
 - d. My Heritage
 - e. Genealogy.com
 - f. Family Search
 - g. Find a Grave
 - h. Ellis Island
 - i. Cyndi's List
 - j. Other
14. Have you ever posted a comment or replied to a inquiry on the community forum of one of these websites?
- a. Yes
 - b. No

15. Have you tried DNA testing from a website, and if so, which service did you use? (choose all that apply)
 - a. 23andMe
 - b. Ancestry
 - c. Family Tree DNA
 - d. None
 - e. Other
16. Do you subscribe to any genealogy listservs or newsgroups?
 - a. Newsgroups only
 - b. Listservs only
 - c. Both newsgroups and listservs
 - d. Neither
17. Which of these genealogy blogs do you read regularly? (choose all that apply)
 - a. Eastman's Online Genealogy Newsletter
 - b. The Armchair Genealogist
 - c. Hidden Genealogy
 - d. Everton Publishers Genealogy Blog (www.genealogyblog.com)
 - e. I do not follow genealogy bloggers
 - f. Other
18. Which apps do you use on your smart phone or tablet? (choose all that apply)
 - a. My Heritage
 - b. Ancestry
 - c. RootsMagic
 - d. Interviewy
 - e. WDYTYA Forum
 - f. Find a Grave
 - g. Trello (or other list making apps)
 - h. Evernote or One Note
 - i. SmartDoc (or other image capturing apps)
 - j. I don't use apps
 - k. Other
19. Have any of these problems arisen in your genealogical research? (choose all that apply)
 - a. Fraudulent pedigree
 - b. Questionable source/information
 - c. Identify Theft

- d. Paying for access
 - e. Loss of records due to fires, natural disasters, preservation, etc.
 - f. Learned of hereditary illnesses/genetic disorders via DNA testing
 - g. Ethical issues
 - h. None
 - i. Other
20. Which traditional records do you utilize when possible or applicable?
(choose all that apply)
- a. Newspapers
 - b. Periodicals or journals
 - c. Unpublished correspondence, manuscripts, diaries or journals
 - d. Government documents (including census, vital, and military records, etc.)
 - e. Cemetery records
 - f. Church records
 - g. City/county directories
 - h. None
 - i. Other
21. How often do you visit a library, archive or repository in person for research purposes?
- a. Never
 - b. Sometimes
 - c. Regularly
 - d. High frequency
22. Have you ever used a finding aid for a library, archive or repository (for genealogical research), either in person at the facility or via their website?
(examples: index, catalog, bibliography, inventory or directory)
- a. Yes, in person only
 - b. Yes, online only
 - c. Yes, both in person and online
 - d. No
23. Do you use social media to follow genealogy topics?
- a. Yes
 - b. No
24. Which social media sites do you use for genealogical purposes, if any?
(choose all that apply)
- a. Facebook
 - b. Instagram

- c. Twitter
 - d. MySpace
 - e. LinkedIn
 - f. Flickr
 - g. Pinterest
 - h. Google+
 - i. Vine
 - j. None
 - k. Other
25. If you were to discover a new ancestor on your family tree, where would you start your research?
- a. Ask a family member
 - b. Visit a website such as Ancestry, Family Search, etc.
 - c. Published records
 - d. Other
26. What has been your biggest obstacle in researching your ancestry?
(choose all that apply)
- a. Loss of records (due to fires, disasters, preservation issues etc.)
 - b. Little or no access to records outside of your geographic region
(including international records)
 - c. Language barrier
 - d. Relatives who won't cooperate
 - e. Can't verify names/dates
 - f. Paying for access/information
 - g. Other
27. When is it acceptable to pay for information?
- a. Only when requesting a copy of a document (paper or electronic delivery)
 - b. Never—there should be free access across the board
 - c. Monthly/annual membership fees for access are acceptable
 - d. I should be able to find a document online and access it just once, for a small, one-time charge (no subscription necessary)
 - e. Only when hiring a professional genealogist
 - f. Only when accessing records held outside the U.S.
28. Additional comments:

January 2015

Merging Special Collections with GIS Technology to Enhance the User Experience

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Introduction

For archivists, librarians and curators, a plethora of new digital technologies are available that, when combined with their special collections,¹ can create a more enhanced participatory user experience and shed new light on their depth and breadth. Integrating technology and mobile applications with their collections attracts new audiences to their institutions and creates a unique user experience for their patrons who have a broader range of needs and expectations.

Twenty-first century collection managers have reached a point where they must provide more innovative digital services to patrons or risk becoming irrelevant. One of the ways institutions are transforming their collections is by merging geospatial technology with historic materials to transform how the public views and interacts with them. The latest generation of researchers now identify with technology and are more open to innovative experiences. They require, and often demand, a more enhanced technological experience than earlier generations of researchers. Institutions must constantly adapt to attract and challenge this new style of researcher or risk becoming obsolete as other institutions integrate technology with their collections. The problem collection managers must now contend with is how to influence and appeal to this new breed of researcher while continually merging collections with cutting edge technology.

One institution that has merged and adapted their unique collection with GIS technology and crowdsourcing is *PhillyHistory.org*, developed by the City of Philadelphia Department of Records. This paper will analyze how *PhillyHistory.org* collaborated with community and local institutions; mixed best metadata practices with custom elements to create map mashups; and merged progressive GIS technology and geospatial-based applications with their collections to enhance the user experience.

Background

Geographic Information System (GIS)

Geographic Information System, or GIS, is a computer-based tool to assist in mapping and analyzing “things that exist and events that happen on earth” (Geo Community, 2015). GIS integrates common database operations and statistical analysis with visualization and geographical analysis of other maps.

GIS enables institutions to create maps, integrate information, visualize locations, present collections in a new innovative way, and develop unique solutions to enhance user’s access and website interaction (Geo Community,

¹ For the purposes of this paper special collections or collections will refer to any type of archival, manuscript, museum, digital, or public history collection.

2015). This technology takes map making and geographic analysis to a new level by advancing the field and making it faster than old methods.

Google Maps

In 2005, Google launched its new online map service Google Maps. Now, 10 years later, the features in Google Maps and other online map services have become indispensable to users. Google Maps permits users to view maps, get directions between two locations, see topographical terrain, and view satellite imagery. Recently added was a traffic alert feature to allow users to avoid accidents and evade slow transportation flows (Strickland, n.d.).

Google Maps relies on digital map images provided by NAVTEQ to enhance their technology. Google merged NAVTEQ applications with Atlas, their own in-house mapping program, to create the features you now see on Google Maps (Miller, 2014). Other features include walking directions and Street View, a massive operation that requires extensive amounts of human labor to acquire all the data, humans to compile the data, and operators to massage the data and enhance the view. These operators go through thousands of images and add data including small changes to make the roads easier see, parking lots stand out, and walking paths viewable (Madrigal, 2014).

Google Earth

Google Earth is a geobrowser that uses satellite and aerial imagery, ocean bathymetry, and a host of geographic data accessible over the internet to create 3D global representations of the Earth (Science Education Resource Center, 2015). As one zooms in you are going through a series of successive images to get closer shots that range from a NASA satellite to an aerial image depending on the location. A geobrowser is a virtual globe that allows browsing of the Earth or other planetary entity (Science Education Resource Center, 2015). NASA often creates and uses geobrowsers in their virtual exhibits and 3D visualization displays.

Google Earth provides search capabilities plus the ability to pan, zoom, rotate, and tilt the Earth. New features allow the creation of layers that can include maps, photographs, geographic terrain and data like volcanoes, populations, and public works information like sewers or historic maps (Science Education Resource Center, 2015). This capability, merged with historic collections, can create a new and unique experience for our researchers.

Literature Review

Collaboration

Special collection managers are broaching the issue of how to take their materials from static collections to the digital realm while simultaneously engaging their communities. With limited resources and shrinking staffs, many are turning to collaborative partnerships with other institutions, volunteer organizations, academia, and the local community to develop broader, richer online sites.

In response to Meissner and Greene's article *More Product, Less Process*,² OCLC has argued that libraries and other information institutions should increase digitization efforts focusing more on quantity rather than quality to increase access to hidden or inaccessible collections (Erway and Schaffner, 2007, p. 3). This has encouraged the mass digitization of all special collection materials, which many have begun, before they have the infrastructure in place to maintain or the funding established to migrate digital materials in perpetuity.

Some of the main issues institutions confront are inconsistent funding and lack of internal support. Information institutions that engage in digitization and succeed seemingly rely on cross-departmental group projects to leverage staff expertise (Gueguen and Hanlon, 2009, p. 3). Smaller institutions, often hosted by one larger institution, are banding together to form consortium style projects, combining funding, equipment, staff, and subject matter expertise to create cost effective multi-dimensional digital collections that they would never otherwise be able to produce.

The San Fernando Valley History Digital Library (2015) at California State University Northridge (CSUN) brought together significant historical photographs, illustrations, maps, manuscripts, and various archival materials from a variety of collections located on the CSUN campus, as well as archival material from twenty-nine local historical societies in the San Fernando Valley. The digital library was one of the first to collaborate campus collections with local historical collections assisting smaller institutions to increase access and providing one online resource for San Fernando Valley history (San Fernando Valley History, 2015).

CENDARI (2015) is another successful example of a collaborative digital archive that merges archival, manuscript, and library materials across both institutional and national borders at one easily accessible location for scholars. The project is funded by the European Union and fourteen major research

² *More Product, Less Process*, written by Dennis Meissner and Mark Greene and published in the *American Archivist* in Fall/Winter 2005 issue, is an influential article advocating minimal processing of archival collections to reduce backlogs and increase access to long hidden and inaccessible archival collections.

institutions providing a major educational resource on a global platform (CENDARI, 2015). These initiatives represent some of the most viable approaches for institutions to adapt to the ever-evolving workplace dynamic that includes increased requirements and shrinking budget and staff (Hunter, et al., 2010, 85).

The University of Maryland established new policies to coordinate and plan digital initiatives and to develop a central digital repository to house all digitized collections. The institution's goal aimed to limit re-scanning of frequently requested materials and repurpose materials that had already been scanned. All future materials scanned for historical or patron requests would be added to the digital repository. This would serve two purposes – to assist patrons with requests while simultaneously increasing global access to archival and manuscript collections (Gueguen and Hanlon, 2009, p. 1). In order to maximize labor dollars and minimize rework or damage to the collection, many institutions are redefining and restructuring their digital workflows utilizing similar strategies.

Utilizing volunteers and interns in archival digitization projects is another way institutions can collaborate with local patrons, groups, and colleges to engage the communities they serve. Including volunteers and interns in projects allows institutions to promote user involvement, increase metrics, add value to the work, and allow staff to increase their work production in areas they would otherwise not be able to complete (Howlett, et al., 2005, pp. 12-13). Both are invaluable resources allowing the institution to increase public programs, online resources, and educate the community.

Map Mashups

Mashups are interactive web applications that use content from several sources to create a single display showing all the graphical sources (Engard, 2012, p. 3). The simplest type of map mashup can be created by simply adding a map link to your site indicating the institution's location. Other mashups mix photographs, videos, social media, and news feeds most of which can be done in-house with moderate technological expertise. This new type of application allows institutions to merge collections with maps and GIS type software to challenge and entertain patrons.

One term that has emerged in special collection's jargon is the notion of "shareable" metadata (Riley and Shepard, 2009, p. 91). Patrons' expectations have risen demanding institutions increase collection access whether through finding guides, digital content, or interactive applications. One way collection managers are sharing their collections and descriptive metadata is by combining materials, especially those with a geographic component, such as architectural records and general development maps, and integrating GIS services such as Story Maps, Google Maps, and Google Earth (Riley and Shepard, 2009, p. 94).

There are many different map applications that can be used to create an enhanced user experience between the collections and community. One is Story Maps which allows individuals and communities to create and share information in a 3D atmosphere (Engard, 2014, p. 33). The software allows you to combine authoritative maps with narrative text, images, and multimedia content (Story Maps, 2015). Story Maps enables institutions to connect with their audience by crafting text, maps, and digital materials to engage them. Another possibility is to create walking or driving tours of your institutions, community highlights, or local historic events. The software is fully customizable to allow the institution to mix historic materials, photographs, and text in layers to create an enhanced, engaging site for the global and mobile communities.

The Bassi-Veratti Collection is a multi-year collaboration between the Stanford University Libraries, the Biblioteca Comunale dell'Archiginnasio, Bologna, Italy, and the Istituto per i Beni Artistici, Culturali e Naturali della Regione Emilia-Romagna, to create a digital archive of Laura Bassi, an influential female scientist. The collection contains archival materials related to Bassi; her husband, scientist Giuseppe Veratti; and their family (Stanford, n.d.). The Bassi-Veratti archive took advantage of geospatial mashup components that allow sites to merge archival materials, text, and Google Maps to assist researchers (Engard, 2014, p. 255). The interactive map allows the user to geographically explore content by location as well as document type; personal, corporate, or family name; and date.

The *Nagasaki Archive* (2015) designed a unique approach to teach the lessons of Atomic War and its aftermath through survivor oral histories, archival materials, and geospatial imagery using Google Earth, topographic data, and historic maps. The digital archive allows the user to view images on the Google Earth globe at the same angle they were taken 70 years ago allowing better visual understanding of the events and aftermath. Survivor stories, shown on the map, allow users to see exactly where they were exposed to the Atomic bomb and read their personal experiences. Displays also include current photographs that allow users to visualize reconstruction over time (Nagasaki Archive, 2015). *Nagasaki Archive* merges resources from all over the world in an attempt to reorganize the information using a digital virtual globe, allowing users to visualize the survivor's experiences and experience what Nagasaki endured and how it reemerged. This unique use of Google Earth and geospatial data, merged with archival materials and oral histories, creates an interactive experience that engages, challenges, and educates patrons.

User Experience

While most information institutions are not in the for-profit business, they do have a responsibility to deepen the connection between their institution and their patrons whether onsite or in the digital realm. Enhancing the User Experience (UX) means to deepen their feelings when they use the site or visit the facility (Schmidt and Etches, 2014, p. 1). This has become an integral part of special collection institutions compelling them to learn how to engage, attract, and inspire their patrons in the digital realm.

One of the more popular ways institutions are inspiring patrons to engage with and enhance online collections is through personal contributions. Patrons help develop new exhibits and online sites by providing feedback during visits; adding tags, opinions, and comments on storyboards and content pages; and attaching memories, documents, and photographs in online reflective spaces. Allowing online and onsite visitors to add content “personalizes and diversifies the voices” (Simon, 2010, p. 203) at institutions, enhancing the complexity and scope of the original exhibit or digital project. The original product takes on a life of its own, growing and branching off in unforeseen ways to become a much more poignant piece.

The New York Public Library is updating its Rare Books Division by reaching out to patrons and the community for volunteers to assist them in digitizing and adding metadata to more than 40,000 menus collected since 1900. In addition, the volunteers are creating a fully searchable database for scholars and anyone interested in historically-themed restaurant information (Day, 2011). This project invites the community to take an active part in the preservation of local history, engaging them not only with the institution but in the effort to increase access to historic New York culture and events.

A new and growing trend of crowdsourcing in special collections is patron transcription of handwritten papers, diaries, logs, and rare books. Volunteers are donating their time to transcribe tens of thousands of digitized pages for archives, libraries, and other public history institutions (Day, 2011). The *Old Weather* site focuses on volunteers transcribing hundreds of thousands of ship’s logs to assist scientists in improving knowledge of past environmental conditions and contribute to climate model projections (Bentham, 2011). Historians use the volunteer’s work to track past ship movements and convey the stories of the people on board (Old Weather, 2015).

The University of Iowa Libraries launched an exhibition and digital collection to commemorate the Civil War sesquicentennial in 2011. The exhibit and digital collection contain thousands of diary pages from three manuscript collections held by Special Collections and University Archives which offer a unique perspective on the war. As part of the digital collection project, volunteers painstakingly reviewed over 3,000 digitized pages and transcribed the handwriting of hundreds of different writers and checked each other for accuracy

(Wolfe, 2011). This unique, hands-on effort allows participants to view and experience a more personal side of American history. This new type of crowdsourcing is revolutionizing the digital humanities by creating an inclusive experience for the public and scholars who can now not only access the materials but also create a personal experience with the people and events from a significant period in our nation's history.

Methodology

One institution that merged their historic collections with GIS technology, Google Maps and Google Earth to enhance their collections and the user experience is *PhillyHistory.org*. With its unique subject matter, records, and community, *PhillyHistory.org* approached the issue of online access and metadata element choice by linking the collection with geospatial-based applications and metadata. The institution uses Dublin Core elements and custom advanced options with crowdsourcing techniques to engage patrons and enhance the collection.

The analysis of *PhillyHistory.org* will identify collaborative methods used to develop more comprehensive, rich collections; what metadata elements and advanced options were selected; and how they initially approached and continue to expand their project using geospatial technology to enhance the user experience.

Case Study: PhillyHistory.org

The City Archives, part of the City of Philadelphia Department of Records (DOR), manages the official historical records for the City of Philadelphia. Part of this collection is a large historic photograph collection taken by public works, city planners, and other city offices that visually documents the history of Philadelphia (Boyer, Cheetham and Johnson, 2011, p. 652). The photographs include images of buildings, streetscapes, parks and waterways dating back to 1865. These stunning pictures show horse-drawn carriages on cobblestone streets, historic homes and buildings, wooden hulled ships arriving at the port, and the city's most historic buildings and sites including Independence Hall, Eastern State Penitentiary, and the Liberty Bell (ERSI, 2005, p. 1).

DOR houses an estimated one to two million images taken as part of public works projects to provide process documentation and serve as a risk management tool. Unbeknownst, these images, taken by city workers in the course of their daily work, also served to make Philadelphia one of the best historically photographed cities in America. These images provide a visual interpretation of the past and the ability for the public to see one of America's most historically significant cities transform over the course of the last 150 years (Boyer, et al., 2011, p. 652).

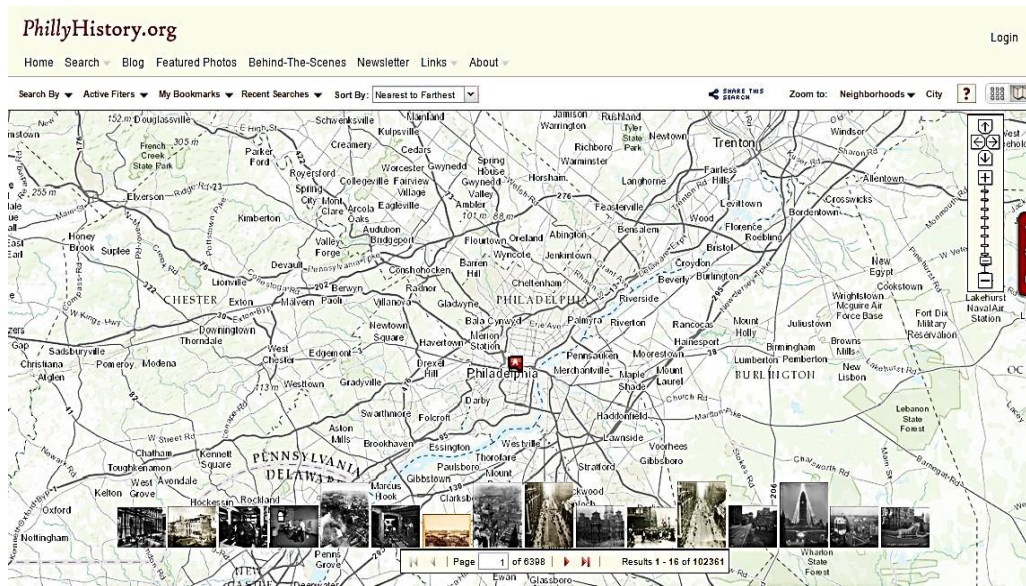


Figure 1: Map search view on PhillyHistory.org.

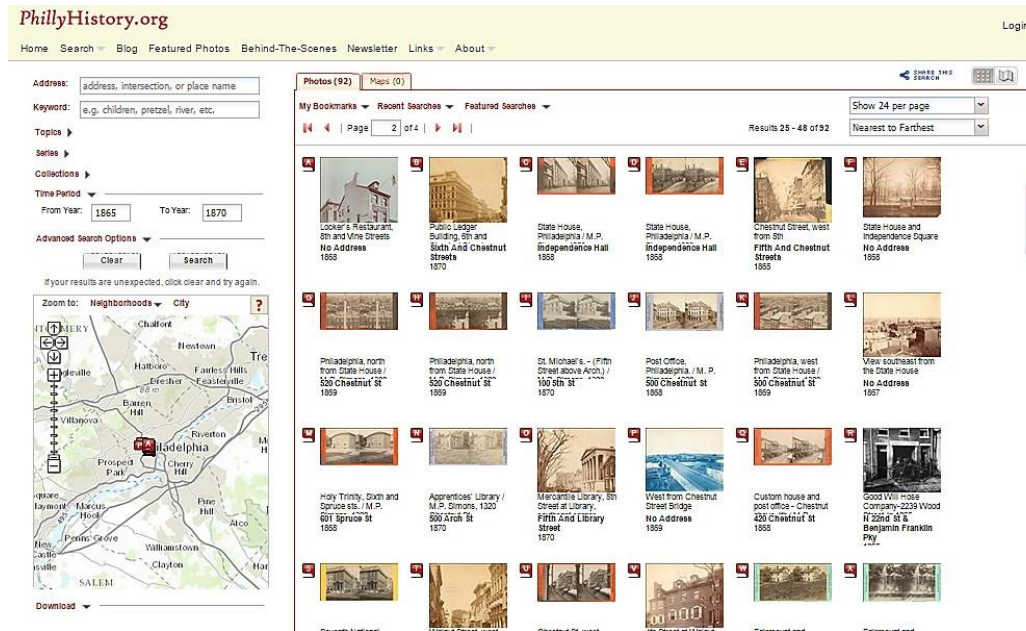


Figure 2: The *PhillyHistory.org* thumbnail-base search page showing search options, geographic information, and thumbnail views of search results.

DOR, however, recognized these images had minimal value stored in the stacks, inaccessible and unseen by most of the public. Creating an online digital archive solved several issues facing DOR including preservation, increasing public and civilian worker access, gaining intellectual and physical control of the collection, and enhancing the user experience.

In 2004, in an effort to provide increased access to the photographic collection, DOR began searching for programs and companies that could make their images available in digital format. Besides requiring a site to increase access to each image, they wanted a system to provide a way to manage the various geographic and metadata information associated with each photograph to ease location of streets, neighborhoods, and businesses. Another requirement for the site was a revenue-generating component to support the project and expand the digitization capability (Boyer, et al., 2011, p. 653).

DOR, working in consultation with Azavea, a software company specializing in GIS, launched *PhillyHistory.org* in 2005 (City of Philadelphia, 2011, p. 5). The new web-based digital asset management system brought Philadelphia's images out of the stacks and into the 21st-century utilizing web-based GIS applications. This allows the public to search for locations within a specific radius of an address, near an intersection, or by a place-name (ERSI, 2005, p. 1)

A major aspect added to this site is the use of geographic information system (GIS) technology. Each image is geocoded, which assigns latitude and longitude coordinates linking it to a mapping feature on *PhillyHistory.org*, enabling users to search the site by street address, intersection, neighborhood name or to view the location of each image on a map or satellite viewpoint (Boyer, et al., 2011, p. 654). This is one of the most beneficial and unique features of the website allowing patrons to search the geographic information as well as by collection or business name.

In an effort to streamline search access to tens of thousands of images covering the sprawling streets of Philadelphia, *PhillyHistory.org* includes several visual search pages, Map View (see Figure 1) and Thumbnail View (see Figure 2), that enable users to visually search photographs by geographic location (address, intersection, business or place name, and neighborhood), keyword, topic, series, collection, time period, and advanced search options. Map View, utilizing Google Maps open-source software, allows the user to narrow down their images by zooming into a specific location and view the images at the bottom of the screen.

In Thumbnail View, each image is visible in a thumbnail with a title or basic location details with a Google Map on the left side to assist the patron with geographical orientation. When the user clicks on the thumbnail image, a larger detailed view of the image appears showing metadata fields, a small map indicating the photograph location, and the ability to view the location in Google

Chestnut Street, west from 5th

Title	Chestnut Street, west from 5th
Description	The street with buildings. Trolley tracks, horses and buggies in street. People along sidewalk. Flags hanging from buildings. Firms include: "Kelly's Hotel"; "Orleans Hotel"; "... Orleans House on the European plan".
Quotation	"Visible through the trees, left, is the Public Ledger Building. The waving flags are probably in celebration of the end of the Civil War."—OPEP, p. 128., 1978
Notes	Free Library Subjects: Animals, Carriages & coaches, Chestnut Street, Fifth Street, Flags, American, Horses, Hotels, Kelly Hotel, Men, Newspaper industry, Orleans Hotel, People, Public Ledger (Firm), Street railroad tracks, Washington Square, Women

Figure 3: PhillyHistory.org detailed view showing Chestnut Street, west from 5th photograph.

Earth or Google Street View to see how it looks today (see Figure 3). The larger detailed version allows users to save the image at a sufficiently high enough resolution to be used by students, city workers, or researchers without requiring purchase. Another popular feature is the Philadelphia Historic Street Index that matches former street names to their current names, making it easier for researchers or historians to find current addresses of historic buildings or residences.

In an effort to keep their project on the cutting-edge of technology and innovation, *PhillyHistory.org* added Google Earth to their list of features in October 2007. The site offers three different ways to display Google Earth. The first provides a button saying "Show in Google Earth" on all images with location capability allowing the displayed image to be viewed. The second allows the first 100 records of any search to be shown as a group on the Google Earth aerial view (see Figure 4). Finally, the site offers a feature allowing patrons to view the entire

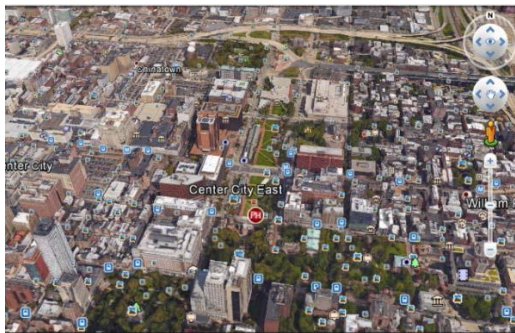


Figure 4: Google Earth aerial view of downtown Philadelphia.



Figure 5: Google Earth street view of Chestnut street west of 5th.



Figure 6: Google Street View of Chestnut Street west of 5th.



Figure 7: Google map of downtown Philadelphia.

collection in Google Earth. Currently, there are almost 110,000 images making this a rather dense set of imagery, but as you zoom in the image number decreases (Cheetham, 2007). Google Earth allows the user to glide over a 3D version of Philadelphia, click on historic images and view them in Google Earth Street View (see Figure 5) which brings you down to the street level to see how it looks today. Google Street View provides the user with current street level photographs of Philadelphia allowing them to see landmarks, streets, and neighborhoods without having to travel to the city. *PhillyHistory.org* offers their users the chance to see how a historic image they are viewing looks today by linking the historic image with the current Google Street View image (see Figure 6). Google Maps allows users to visually see the neighborhood and location of the image (see Figure 7) and choose images based on location.

PhillyHistory.org also offers new crowdsourcing possibilities to engage the public by allowing them to add comments, register as a user, add images to favorites or email staff error reports. Also viewable are social media links to Twitter, Facebook, Pinterest, Google Plus and a blog to allow users to share and exchange photographs, information, ideas, and stories. Patrons can also submit a scan request that is added to the queue (ESRI, 2005, p. 13). This form of crowdsourcing engages the public with the program, gains their feedback on the site, and increases public use while simultaneously helping staff to prioritize scanning based on public demand.

Two major revenue-generating options available from this page are purchase and license capabilities. Patrons interested in purchasing a professional print are able to choose the size, type of paper, and style of the print requested. Other options include purchasing images on posters, canvas or greeting cards, invitations or postcards. The card option allows the purchaser to add a customized personal message. This is all done through a third party company. In order to license images, you must be a registered user and approve the scope of an agreement limiting use.

In 2008, *PhillyHistory.org* began working collaboratively with the Philadelphia Free Library, Library Company of Philadelphia, the Office of the City Representative, and the Philadelphia Water Department to serve as their online repository. This not only created one site for a significant amount of Philadelphia's historic photographs but also streamlined assets, staff allocation, subject matter expertise, and resources. In addition, each organization or department receives any net revenue from the sales of their images while maintaining all licensing and copyright (Boyer, et al., 2011, p. 659). This collaboration effort allows smaller organizations and departments to earn extra

Title	Chestnut Street, west from 5th
Description	The street with buildings. Trolley tracks, horses and buggies in street. People along sidewalk. Flags hanging from buildings. Firms include: "Kelly's Hotel" ; "Orleans Hotel" ; "... Orleans House on the European plan".
Quotation	"Visible through the trees left, is the Public Ledger Building. The waving flags are probably in celebration of the end of the Civil War."--OPEP, p. 126., 1976
Notes	Free Library Subjects: Animals, Carriages & coaches, Chestnut Street, Fifth Street, Flags, American, Horses, Hotels, Kelly Hotel, Men, Newspaper industry, Orleans Hotel, People, Public Ledger (Firm), Street railroad tracks, Washington Square, Women
Address	Fifth And Chestnut Streets
Date	c. 1865
Collection	Free Library - Historical Images of Philadelphia
Collection ID	PDCL00122
Asset ID	97871
Topics	
Hyperlink	View Additional Photo Information on the Free Library's Website

Figure 8: *PhillyHistory.org* metadata fields for Chestnut Street west from 5th image

Table 1

PhillyHistory.org metadata options for Topic, Series, Collection, and Advanced Search Options available via drop down lists.

Topic Options	Series Options	Collection Options	Advanced Search Options
aerial view	Billboards	DOR Archives	Include records without digitized media.
architecture			
art	Centennial	DOR Archives –	Include records without a location.
boat	Exhibition 1876	Manuscript Plans and Maps	
bridge			View only records without a location.
car			
cemetery	Dignitaries and	DOR Archives -	Records changed
church	Entertainers	Sesquicentennial	
construction		DOR Property Maps	
Delaware River	Featured Photos		
dignitaries	from the		
entertainers	Sesquicentennial	Free Library –	
health		Centennial	
horse		Exhibition	
hospital	Histomont Park	Free Library – Historic	
infrastructure	Houses in Fair	Maps	
monument			
mummers		Free Library – Historic	
panorama	Historical Images	Images of Philadelphia	
parade	of Philadelphia		
park		Library Company of	
people		Philadelphia	
park	Philadelphia Piers		
railroad		Office of the City	
		Representative	
recreation			
restaurant			
Schuylkill River	Statues by the	Philadelphia Water	
sign	Calder Artists	Department Photographs	
store			
theatre			
transportation			
wagon			



Figure 9: Augmented Reality app optimized for smart phones provides the user with geographic search access to the entire collection. The image on the left shows the photograph in relative position where it faces the user. The image on the right shows the photograph at an angled view based on coordinates (Azavea, 2011).

revenue for their programs, reap visibility benefits, demonstrate value to stakeholders and the community, and increase user access to their collections.

PhillyHistory.org metadata has been derived from the original storage envelope each image or negative is stored in. Interns add as much descriptive metadata as available while a team of researchers investigate the location to more accurately describe and geocode each image (Boyer, et al., 2011, p. 657). The descriptive metadata, which appears to use Dublin Core elements, includes title, description, quotation, notes, address, date, collection, collection ID, asset ID, topics, series, and any hyperlinks to related materials or websites (see Figure 8). The topic, series, collection and advanced search options provide drop down lists allowing patrons to refine their search parameters (see Table 1). The patron can use any of the search options alone, combine two or more for the same data

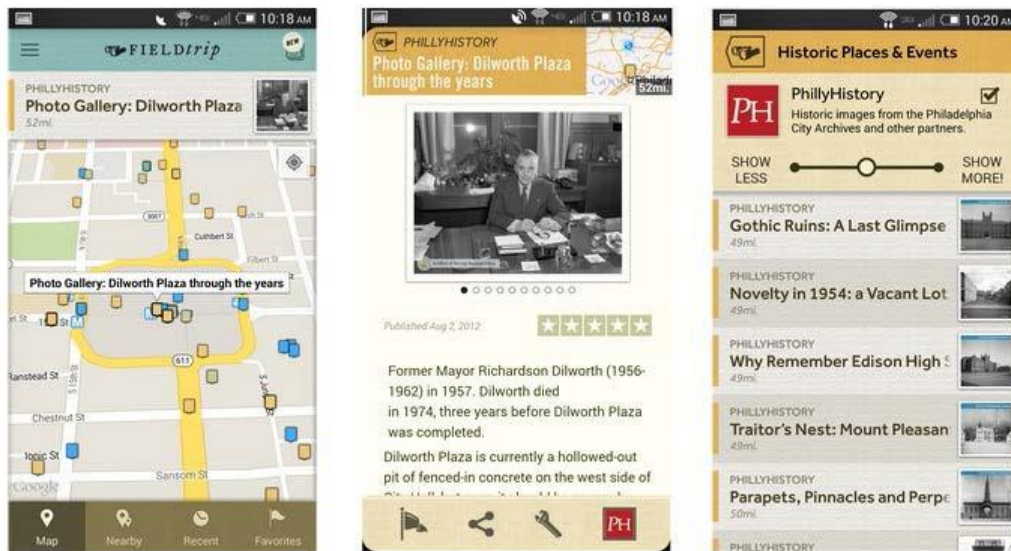


Figure 10: PhillyHistory.org returns for Dillworth Plaza (The PhillyHistory Blog, 2014)

source, use them in combination with a search box at the top of the screen or set date parameters.

In 2007, DOR launched its new addition *PhillyHistory.org* Mobile app, to increase collection access via cell phone, tablets, and other mobile devices. This new technology, optimized for Apple and Android devices, allows users to view images while at any location which creates a unique “walking tour” through history as they explore the city and its rich history.

The Department of Records was awarded an NEH Digital Humanities Start-Up Grant in 2010 to develop innovative techniques for merging historic and modern photographs on smartphones which would expand public access to historic data and create a challenging and dynamic user experience. The result was *Augmented Reality*, a new software program designed to augment people’s experience with the world by overlaying it with additional digital information and assets. The application provides point-and-view access which allows users to access and view historic photographs of selected sites (see Figure 9). The user points the smartphone camera at the contemporary site and selects one of the available photographs (Azavea, 2011). The historic photograph then appears as an overlay on the current view via the camera, enabling users to view the location as it was in the past.

In an effort to increase access and enhance the user experience, *PhillyHistory.org* worked in conjunction with NianticLabs@Google, creators of

Field Trip, to provide a cultural guide to the city's hidden history (The *PhillyHistory* Blog, 2014). *Field Trip* is a guide to the world around you and available free on both iPhones and Android devices. The app runs on your phone in the background and tells you when you get close to something interesting available on their site (Field Trip, 2015). It not only shows you images but also gives you the geographic location and historic details and can even read the information to you. *Field Trip* allows users to explore locations around the world including historic places and events, architecture, museums, art, and public history (see Figure 10).

PhillyHistory.org chose selected materials from their collection to be available through the *Field Trip* app as a way to increase collaborative efforts and visibility. As the user traverses the city streets, historic images emerge allowing the user to experience an enhanced and dynamic view of Philadelphia's history not previously experienced (The *PhillyHistory* Blog, 2014). This new altered interpretation provides users with a unique geographic and cultural experience while going about their day-to-day tasks or while exploring the city.

Conclusions

PhillyHistory.org has created a new dynamic way to merge special collections with GIS technology to gain intellectual and physical control of their collection; increase user access; collaborate with local and community organizations; and create a challenging, thought-provoking site. The institution showed how geography can be utilized to engage the public, create enthusiasm for historic collections, help obtain resources and support, and enhance the user experience. *PhillyHistory.org* has been so successful that they have not only garnered media and public attention but also special collection organizations have taken note and are using similar software, applications, and techniques to create new challenging geospatial-based digital access to their collections.

Twenty-first century collection managers are constantly seeking progressive solutions and technology to digitize their assets and make them available online. This ability to preserve their collections while reaching a global audience has become paramount to institutions that, like DOR, have materials deteriorating in the stacks, unknown and undiscovered by patrons. In order to reach these patrons, they must utilize current technology. Using GIS technology is one way to challenge patrons and increase access and interest in their collections.

Future research in this area should explore the different ways geospatial-based applications can be merged with special collections, museum artifacts, and oral histories to engage and challenge users. The advent of new and burgeoning GIS technology, social media, and interactive applications allows institutions to explore the multitude of ways collections can be used to increase access and

enhance the user experience with cutting edge technology. Projects using geospatial-based applications and GIS technology are still in their first decade of use and collection managers are just beginning to explore the many innovative possibilities available. Institutions must continually explore the existing opportunities to transform their collections into dynamic, interactive mashups with progressive interface capabilities. The possibilities are limitless as institutions are only hindered by the imagination of staff, patrons, and the global communities they serve.

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The Tumblarians

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The Tumblarians

Cover Page Footnote

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INTRODUCTION

Blogging has changed. While various iterations of blogging technology have coexisted online for years—from homegrown, to Blogger, to Wordpress— there are emerging new microblogging services which call into question the relationship of the technology to the genre, and to the communities which use them. For more than a decade the LIS blogosphere has been investigated by numerous researchers seeking to describe the shape and structure of the blogosphere, as well as the players and their communities.

Enter tumblr, and enter the tumblarians [sic]. The term, *tumblarians*, is a combination of tumblr and librarians. Bound by use of their hashtag of the same name, the tumblarians share information, connect socially, and even maintain community listings (Tkacik, 2012). A virtual community centered topically around librarianship, the tumblarians may be the newest additions to the LIS blogosphere—or they may be something completely different. Tumblr inhabits a unique middle ground, serving as “a social network, a blogosphere and social media simultaneously” (Chang, Tang, Inagaki, and Liu, 2014, p. 28), and the tumblarians are heretofore unexplored in the LIS literature.

In seeking a deeper understanding of the tumblarians, this paper explores how they fit within the existing LIS literature, what defining characteristics may be suggested, and which models of community may be applicable. Building on a body of research regarding the LIS blogosphere, this paper provides preliminary examination into the tumblarians: a new community of LIS-topical microbloggers.

LITERATURE REVIEW

Tumblr in the Research

Tumblr is still a new technology relative to scholarly research and publishing cycles, and only two relevant references were found in the LIS literature. Power (2014) offered an indexing of select LIS-topical blogs on tumblr, but treatment was limited to brief descriptions and the article provided no discussion or directions for research. In a recent conference publication, Rose (2013) discussed preliminary research exploring the functions of hashtag use on tumblr. Rose’s final research was unpublished at the time of writing, but preliminary findings suggested meta-categories of contributing to discourse, contributing to community, organizing information, and expressing emotion.

As a platform, tumblr may be considered a type of hybrid which enables both blogging (as evidenced by the language used by both the tumblr site and literature which describes the site’s functionality) as well as functions more strongly associated with social media. In considering the tumblarians as bloggers, research concerning the LIS blogosphere may be considered most analogous. Blogging has already undergone substantial format changes while continuing to be discussed holistically in the literature. In *How Blogging Software Reshapes the Online Community*, Blood (2004) discussed substantial changes to the nature of blogs and the blogging community as popular free software made blogging more accessible to those unable to code HTML. While the communicative purpose of tumblr cannot be assumed as the same as other blogs, tumblr is identified as a type of blogging (Chang et al., 2014) and the language associated with tumblr (e.g., *blog, posts, tags, comment*) shows substantial overlap with other blogging platforms.

The LIS Blogosphere

A review of the literature concerning the LIS blogosphere revealed both a body of research focused largely on description and classification, and other research concerned with the bloggers themselves and their community. Of the former, Bar-Ilan (2004; 2007) and Aharony (2009a; 2009b; 2010) provided foundational structural analyses of LIS blogs which focused on aspects of classification: topical analysis and content classification of posts, comments, metadata, and other descriptive statistics. Nardi, Schiano, Gumbrecht, and Swartz's (2004) popular article, *Why We Blog*, and Stephens' (2008) research of LIS bloggers provided a counterpoint in the research by examining more in depth the bloggers themselves, their contexts and motivations.

Stephens' (2008) survey of the LIS blogosphere revealed a personal-professional hybrid genre of LIS bloggers who were both motivated and rewarded by professional development a sense community in the blogosphere. Finlay, Hank, Sugimoto, and Johnson (2013) supported the assertion of community between LIS bloggers with an analysis of LIS blog linking structures. Finlay et al found that personal-professional LIS blogs had greater interconnectedness (more linkages, and more linkages across clusters) than institutional blogs, and comprised more of the blogosphere (both in number of blogs, and by having largest networks).

Respondents in Stephens' (2008) research understood the LIS blogosphere as a community, and acknowledged that this community manifested both positive and negative impacts. Greenland (2013) elaborated on this discussion, and identified that in addition to the benefits of communication afforded by the community, LIS bloggers faced challenges regarding privacy, and the negotiation of personal and work identities. Powers (2008) explored this further in an examination of ethical discourse in the LIS blogosphere.

Complemented by the research of Kjellberg (2009), who discussed academic blogs as a situated genre, the LIS blogosphere may be understood as a type of grey literature for the profession. This comparison is made directly in Finlay et al. (2013) and Powers (2008), and Stephens' (2008) *pragmatic biblioblogger* model similarly proposed the LIS blogosphere as a new manifestation of professional practice. An understanding of blogging as grey literature reaffirms the LIS blogosphere as community, and supports the relevance for further consideration in the research.

The Gap: Looking For the Tumblarians

Research concerning LIS bloggers provides a complement for understanding the tumblarians as a blogging community. Informal discussion with a member of the tumblarian community and casual review of content posted with the tumblarian hashtag seem to reveal a consistency with the context and motivations of bloggers revealed by Stephens (2008): A personal-professional hybrid genre, which emphasizes professional development and discourse. There are parallels in format as noted by Finlay et al (2013) who described heavy interlinking between librarians' personal-professional blogs: The tumblarians are inherently linked through their use of hashtags, which may be used to track conversation, or coordinate real-time online meetups.

The decision to focus on the tumblarians as information community was in part informed by the relevant wealth of literature regarding LIS bloggers. While the biblioblogosphere remains active and prolific, new technologies have been popularized since the bulk of research in this area was published circa 2005-2008. Researchers continue to examine the biblioblogosphere, but microblogging services such as twitter and tumblr (the latter inconsistently considered a microblogging platform) have begun to be discussed in the literature as technology platforms

available for content creation. Identified as a form of blogging, microblogging services may be considered as analogous to traditional blogging platforms, such as homegrown systems (as discussed by Blood, 2004) and popular free platforms (e.g., Wordpress, Blogger). A search of the LIS literature for reference to the tumblarians incorporated multiple databases, including Web of Science and LIS specific databases, and a gap was identified in regards to depth of research regarding tumblr. References to tumblr found in the LIS literature were limited to descriptive annotations of tumblarian blogs (Power, 2014) and grey literature providing early stage examinations of blog linkages and the use of hashtags (Rose, 2013). With this gap identified, the next step led to direct interaction with the information community. The following sections will provide an informal investigation and literature-based examination of the defining features of the tumblarians' community.

COMMUNITY INVESTIGATION

In considering a member of the tumblarian community who may provide insight and directions for further understanding of the tumblarians, a colleague from a nearby city, herein referred to as SM, was identified as an accessible and legitimate community member. SM can be considered a legitimate community member because SM self-identifies as a member of the community, regularly interacts with the community through tangible content creation (e.g., public blog posts tagged with the tumblarians hashtag), and is listed in the community index of tumblarians maintained by Tkacik (2012).

A one-time conversation between the researcher and SM took place using Skype teleconferencing on March 9, 2015. An informal discussion with SM described participation mechanics on tumblr, and characteristics of the tumblarian community as perceived and experienced by SM. The discussion with SM was recorded using TalkHelper, a third party recording application for Skype, allowing for later transcription by the researcher. The recording and transcription were reviewed, and informal coding suggested four themes in the discussion. These themes were reinforced by informal review of tumblarian blog content (i.e., posts on tumblr tagged as *tumblarians* or *tumblarian*). However, no formal interview or survey instrument was constructed, and themes identified are within the context of an informal discussion between known colleagues. While themes from this conversation cannot be interpreted as legitimate research findings, many of SM's comments and descriptions suggest the possibility of thematic areas for further exploration, and are discussed in following sections in relation to Fisher, Unruh, and Durrance's (2003) *information communities*.

Discussion with SM suggested a need for further review of the literature. A combination of search methods, including berrypicking techniques such as footnote chasing and citation searching (Bates, 1989), were used to explore research related to Fisher and Durrance's (2003) information communities concept. The literature was explored primarily using Google Scholar as a federated search tool, and numerous databases from the San Jose State University Library were accessed. This exploration and review of the literature enabled a deeper discussion of the tumblarians as an information community.

DISCUSSION

Themes from Discussion with a Community Member

Following informal discussion with tumblarian community member SM, a review of the conversation recording and transcription revealed four themes:

- The tumblarian community as an entry point.
- Tumblarian membership and content is diverse, and includes libraries, librarians, and other users.
- Tumblarians may engage with multiple tumblr communities, of which the tumblarians are only one.
- The tumblarian community provides a place which can be returned to for sharing content, seeking information, or strengthening community through social engagement.

The tumblarian community as an entry point. The conversation with SM began with a discussion of the tumblarians' listing, or index, maintained by Tkacik (2012). SM described the list as a community resource and entry point to engaging with other librarians on tumblr, and emphasized that the list was not a defining border of the tumblarian community. SM suggested that the list could be used to discover librarians to *follow* (i.e., subscribe to a feed of their blog posts), hence curating a personalized feed of tumblarians and other tumblr users. The list was an entry point in that it indexed self-identified librarians whose profiles could be followed (subscribed to) and which provided further access, through links and hashtags, to other tumblr blogs of interest to SM.

When questioned about what types of information SM may have been seeking via use of the tumblarian community, SM identified contact with practicing professionals during the earliest stages of her career as extremely valuable. SM talked about how the tumblarians provided links to a real-world context of the profession while SM was at university pursuing an MLIS. The tumblarian community provided an entry into the profession beyond the geographical communities of work and university, and SM was able to see what librarians in diverse regions were doing at their workplaces.

Tumblarian membership and content is diverse, and includes libraries, librarians, and other users. While discussing Tkacik's (2012) list, SM described a very open definition of membership in the tumblarian community. SM suggested that membership could be understood as including both content creators and consumers. When SM identified value in the ability to observe other practitioners' reflections on their practice, including details of their workplace projects, this was an example of membership through content (information) consumption.

SM characterized Tkacik's (2012) list as including libraries, librarians, and other users. An informal review of posts using the *tumblarians* hashtag supported SM's assertion of a diverse community. Users of the hashtag included libraries (institutions), as well as individual librarians, library workers, and LIS students. Other community members did not identify as with any library category. While these members may have undeclared affiliations with libraries or librarianship, some identified themselves as working in other professions.

That some members were not library-affiliated may be understood in light of the diverse content shared by the tumblarians. Content, as well as membership, was a blend of library-centric and other posts. SM discussed this diversity as central and defining of the tumblarians, noting that while library-centric content was certainly fundamental, the inclusion of other, non library-centric content was a strong and consistent theme in posts and member interests.

Tumblarians may engage with multiple tumblr communities, of which the tumblarians are only one. Related to the diversity of content within the tumblarian community was the possibility of community and interest overlap on the tumblr platform. SM emphasized that users engage with multiple interest-based communities on the tumblr platform, and mentioned *fandoms* repeatedly as an example. The use of hashtags in particular allows users to

simultaneously engage with multiple interest-based communities (e.g., *tumblarians* and *Harry Potter* for a Harry Potter fandom). The degree to which other interests may be considered communities is beyond the scope of this paper, but is discussed here as a unique feature of the tumblarians as community situated within the tumblr platform. Tumblr's use of hashtags was a repeated item of discussion with SM, and appears to be a central and defining feature of the platform itself.

Because librarians may belong to multiple communities on the tumblr platform, non-library themed interests may overlap with interests of other community members. As such, content tagged as *tumblarians* may not always relate to libraries. SM discussed how community and interest overlap may serve to strengthen the tumblarian community by defining more niche interests shared by members. In an informal review of tumblarian posts, this overlap and inclusion of both library-centric and other content was reflected in the community as a whole, and on individual members' blogs. While some tumblarian blogs posted almost exclusively about library-centric content, others, including SM's own blog, presented a mix of personal and professional content.

The tumblarian community provides a place which can be returned to for sharing content, seeking information, or strengthening community through social engagement.

While SM is consistently active on the tumblr platform, SM discussed participating in the tumblarian community irregularly or inconsistently. SM's comments seemed to suggest the tumblarian community as most engaging for new users (i.e., an entry point), where engagement may be highest at the initial encounter and lessen over time. After an initial familiarizing period, the tumblarian community may become a place to return to periodically as part of overall tumblr use.

SM discussed using the *tumblarians* tag for occasional information seeking, giving one example of a request for advice concerning an upcoming job interview. SM characterized the tumblarian community as a low-barrier venue for discussion and information seeking. SM also gave examples of times when the *tumblarians* hashtag may be more active as users occasionally coordinate synchronous blogging (e.g., real-time during live events, or pre-arranged times for synchronous individual screening of a film or show). SM's own tumblarian interests seemed to depend on information encountering in other spheres (including work or school, and also other tumblr communities), which would lead to irregular content sharing or information seeking.

Discussion of the Tumblarians as Information Community

Seeking to further understand the information behaviour of the tumblarians, and the role which information plays in the community, the work of Fisher, Unruh, and Durrance (2003) provide a framework for consideration. In a two year study of three community networks, Fisher, Unruh, and Durrance proposed a model of *information communities* (ICs) defined by five characteristics which can be applied here to a discussion of the tumblarians.

Characteristics 3, 4, & 1: "Information communities effectively exploit the information sharing qualities of emerging technologies and yield multiplier effects for stakeholders" (Fisher, Unruh, & Durrance, 2003, p. 301), "Information communities transcend barriers to information-sharing" (p. 302), and "Information communities emphasize collaboration among diverse information providers" (p. 300).

Fisher, Unruh, and Durrance's (2003) *multiplier effects* identified the potential for ICs to work beyond boundaries by including multiple groups, agencies, and individuals representing a diversity of backgrounds, geography, and service areas. Applied to the tumblarians, there are instances of in-person meetups of community members at professional conferences which

showcase the community's potential to operate both geographically and virtually. Diverse library types are represented in the community, bringing together academic, special, and public librarians as well as archivists, cataloguers, and more. Fisher, Unruh, and Durrance suggested that by their large scope, ICs may pull in new members, hence multiplying both potential information sources (contributing members) and potential information reach as the community scales. A meta-anecdotal example may be found in the connection which allowed the researcher and community member (SM) to connect through locality, bringing a new, potential community member (the researcher) into contact with the virtual IC.

Fisher, Unruh, and Durrance's (2003) discussion of technology identified characteristics which have, since their writing more than a decade ago, come to be innately associated with social media and Internet forums: a centralized place online which can be accessed anonymously (e.g., under pseudonym), asynchronously, and which enables niche information sharing. The ability to link diverse users across geography is again an innate potential of Internet connectivity. These characteristics certainly shape discourse and engagement in the tumblarians community, but may also be understood as common to other virtual communities.

Characteristic 2: "Information Communities anticipate and often form around people's needs to get and use information" (Fisher, Unruh, & Durrance, 2003, p. 301).

In differentiating ICs from other types of virtual communities, Fisher, Unruh, and Durrance (2003) stressed that while subject focus may vary there must be a common interest and a defined information need. The topical aspect will be discussed in this section, whereas the information need will be more fully explored in conjunction with Characteristic Five (section below).

In the case of the tumblarian IC, topical commonality is expressed in part by the hashtag: a combination of tumblr (the platform) and librarian. Career advice, workplace experiences, program development, and professional discourse in the community are all related back to librarianship. Discussion with SM diverged from Fisher, Unruh, and Durrance (2003) where SM identified overlapping communities of interest, and multiple themes in the tumblarian community. In addition to librarianship, *fandom* was identified as a key component of the IC. Further study would be needed to clarify whether fandom elements worked in conjunction with librarian-topical content (e.g., pop culture imagery captioned with some idea or message related to librarianship), or whether fandom appeared distinct from librarianship but using the tumblarian hashtag.

Fisher, Unruh, and Durrance (2003) made a point to distinguish ICs from other virtual communities, yet other discussions of virtual community also include some treatment of information use. Burnett (2000), in an examination of information behaviour in virtual communities, discussed how *information neighbourhoods* develop to meet information needs. According to Burnett, overlapping interests allow members to anticipate information needs in complementary areas:

“Because virtual communities function within a general context of shared interests participants tend to be aware of what information is of potential interest to others, and can, thus, share that information without necessarily going through the formalities of querying an information retrieval system.” (An environmental model of human information behaviour section, para. 7).

Burnett identified a theme related to Fisher, Unruh, and Durrance's need for topical similarity: By constructing a community around a subject theme, a situation may be created in which relevant information may be shared as matter of course and may meet unstated, ambient

information needs of community members. Both Burnett's virtual communities and Fisher, Unruh, and Durrance's ICs identify sharing pertinent information as an element of community definition. However, Burnett's information neighbourhood de-emphasized the concept of purposive information seeking. In place of the centrality of information seeking, Burnett discusses the community aspects of virtual communities, and how social relationships create a space where information sharing may thrive.

Characteristic 5: "Information communities connect people and foster social connectedness" (Fisher, Unruh, & Durrance, 2003, p. 303).

Fisher, Unruh, and Durrance (2003) identified social connectedness as distinct from the connections made by information alone, but did not strongly link social connectedness to concepts of community. According to Fisher, Unruh, and Durrance's (2003) model, the tumblarians may be understood as fostering social connectedness simply as a result of the technology used: commenting, reblogging, tagging users and following feeds. Fisher, Unruh, and Durrance's treatment of community is more information-centric than social or communicative, and offers little basis for insight into how to consider the relationships between the tumblarians as individuals and members of a community, or how the tumblarians may interact with and create meaning from information.

Burnett (2000) reflected on the role of virtual communities as social and interpersonal spaces, and more deeply explored the types of information behaviour which may be facilitated by virtual community. Integrating Savolainen's *everyday life information seeking* (ELIS), Burnett (2000) suggested that virtual communities facilitate information scanning and the *orienting* facet of ELIS by providing a social space in which information is more likely to be serendipitously encountered. Burnett's framework appears to more accurately reflect the centrality of social aspects in an information community. While the tumblarians meet Fisher, Unruh, and Durrance's (2003) criteria for consideration as an IC, there remains strong indication from discussion with SM that social relationships play an important part in the formation of the tumblarians' community. This aspect remains relatively unaddressed in Fisher, Unruh, and Durrance's model.

CONCLUSION

Future research into the tumblarians as an information community may consider information behaviour in light of the social context in which they occur. Related research by Turner and Fisher (2006), building on the IC model of Fisher, Unruh, and Durrance (2003), examined newsgroup information communities for evidence of social roles, and subsequently proposed a model of four social types in ICs. Their types, *members*, *mentors*, *managers*, and *moguls*, may provide a framework for future research into the social roles of the tumblarians.

Future research may also build on the information aspect of Fisher, Unruh, and Durrance's (2003) model, and the LIS literature offers numerous and significant contributions of information researchers who discuss and define models of information-seeking behaviour. However, further considerations of the tumblarians' information use behaviour may benefit from a model which addresses synchronous or collaborative information use and creation. Buckland's multitype understanding of information may offer a conceptual framework for these discussions. Buckland proposes that information may be understood as all-pervasive— indicating knowledge, the process of understanding, and the structures formed along with the creation of it (Bates, 2009). A constructionist perspective may also be useful here in considering information behaviour and systems as constructed within a social discourse (Talja, Tuominen, & Savolainen, 2005).

Future research may also, and even simultaneously, consider the social constructs of the new LIS blogosphere (inclusive of the tumblarians) and its implications for practice and scholarship. A thorough examination of the tumblarians has not been possible within the scope of this paper, and so the treatment of the tumblarians as a community has been explored in two ways: 1) through themes revealed during informal conversation with a community member, and 2) in applying Fisher, Unruh, and Durrance's (2003) model of information communities. What findings may be extrapolated from this paper suggest that there are both social and informational aspects to the tumblarian community, and that the community is both defined topically by its professional focus (librarianship) and its inclusion of other, non-professional content. These characteristics suggest a strong likeness to the LIS blogosphere as found in the review of the literature, and may indicate possible further research into the current LIS blogosphere which could include the tumblarians.

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