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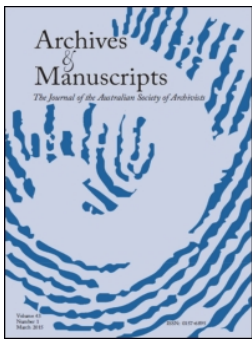*Western University*

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Here, there and everywhere: an analysis of reference services in academic archives

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ABSTRACT

The purpose of this study is to investigate how archivists conduct reference services. The investigators administered two surveys to 19 participants at 15 Canadian academic archives to understand archivists' behaviour while performing reference. There is no standard approach to reference as many archivists use institution-specific tools coupled with their own knowledge. Finding aids are the most frequently accessed tool and are most often used in conjunction with other tools. Limited resources are the primary barrier to the provision of effective reference services. The tools that are employed by archives are archivist focused, which results in reference services that are not user focused.

Reference service is considered to be an integral part of an archivist's professional practice and is central to the researcher–archivist relationship. The processes and technologies archivists utilise when responding to reference inquiries are not standard across the profession, although there are commonalities. These variations could be linked to institutional histories, practices and collections. Researchers expect a certain degree of independence when navigating the archival landscape and the archival profession faces challenges in meeting this expectation, which is reflected in how we manage reference services. Archivist mediation is still a necessary function of the reference process. How archivists gain intellectual access to holdings, and thus by extension, how they fulfil a reference inquiry, is a varied exercise. Traditionally, archivists have used finding aids as their access tool of choice, but has that preference changed since the advent of multifunctional archival management software in the 1980s and 1990s? Have advances in technology and increased accessibility since the early days of DOS and stand-alone workstations translated into a streamlined, simplified reference process?

The purpose of this study is to investigate how archivists conduct reference services through the exploration of archivists' reference tool preferences, frequency and rationale of tool use, reference completion time and barriers to reference service. Previous studies have focused on how users search for archival information; however, little has been written about the information-seeking behaviour of archivists, specifically in the context of the reference

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process. This is an important avenue of investigation since the archival profession is rapidly changing as we attempt to incorporate increasingly complex and multifunctional technology into the workflow. Although technology is constantly evolving to help us better access our collections and streamline many archival functions, to what extent is this technology actually being used across archival institutions?

When an individual archivist is presented with a research inquiry, the archivist determines how, and if, the request for information can be fulfilled based on that archivist's familiarity with the institutional collection and resources. One might make assumptions that the archivist will take the most direct route to find the record source they need. Can it be said that most archives now have access to one keyword-searchable database that includes the entire collection, or does collection metadata only exist within isolated search tools and lists, all of which must be searched to get to the answer? What is the information-seeking behaviour of archivists during a reference interaction?

In order to gain insight on the current practices of archivists within the context of academic archives, we conducted an online survey in 2013.[1] This provided the groundwork for the follow-up research we discuss in this article. In 2016, we conducted a two-part survey that asked archivists about their institutional archives' reference technology along with other aspects of the reference process. The second part of the survey followed, from which we gathered data on the behaviour of individual archivists as they answered a reference question. This paper explores the results of this two-part survey.

Literature review

The literature focusing on how archivists conduct reference service is sparse; however, there are many user studies about the information-seeking behaviour of historians and other archive users. In a 2003 study, Tibbo investigates historians and their information-seeking behaviour by surveying 700 historians from 68 American universities to determine how they looked for primary materials. She finds that historians typically used traditional methods for locating primary materials and that historians used a wide variety of tools to locate primary sources.[2] In a 2012 article, Rhee compares historians' information-seeking behaviour with social scientists' information-seeking behaviour, building on a Meho and Tibbo study. Rhee concludes by adding three behaviours to Meho and Tibbo's model: 'orienting, constructing contextual knowledge, and assessing'.[3] She also provides suggestions for archivists to assist historians with their information seeking, such as bearing in mind historians' information-seeking behaviour while creating finding aids and facilitating reference services, and providing orientation on the archives and finding aids. Similarly, Orbach interviews 10 historians regarding their information-seeking behaviour while conducting research in archives. She comments that historians feel they could not find sources in archives as independently as if they were finding sources in a library setting.[4] The majority of participants state that their success in finding relevant primary sources depends on their relationship with the archivist and the amount of time that the archivist has to assist them.

Duff and Johnson also conduct user studies and interview 10 historians to determine their information-seeking behaviour while conducting archival research. They argue that information seeking consists of many activities, including orientation to the archives, the finding aids and the collection. The participants state that archivists are a resource because 'they were easier to use than finding aids and could make connections to relevant material

in a way that was impossible to replicate in either the printed or online aids'.[5] Duff and Johnson further argue that researchers foster relationships with archivists to gain insights and knowledge about archival collections.[6]

Although archivists should be thought of as information seekers every time they assist a researcher with a reference question, they have not typically been considered as such in the literature. Duff and Fox aim to understand the reference process from the perspective of the archivist. They interview 13 archivists regarding their reference services and find that archivists use finding aids as their main tool when conducting reference services and use more than one tool to answer reference inquiries. 'All of the archivists in this study knew the online system was not complete, so if the system did not return relevant results, the participants consulted the card catalogue or paper inventories.'[7] Their 2006 study highlights 'the link between resources and references services' and maintains that a comprehensive finding aid system is paramount to effective reference service.[8] The lack of comprehensive archival descriptions as well as the lack of complete metadata in a singular reference tool impede the work of archivists and by extension the success of researchers.

Similarly, Yakel reviews the types of tools that archivists have typically used to manage and provide access to collections. Examples of the tools highlighted by Yakel include: card catalogues, shelf lists, finding aids, Encoded Archival Descriptions (EAD) and MARC records.[9] It is important to note that archival management systems are not highlighted in her discussion. She states that 'each of these represents a different technology and a different philosophical approach to privileging information, emphasising information, and the level of granularity of the information'.[10] Her argument that certain technology may privilege information is intriguing as it implies that some records have a higher status or increased visibility within the archives if their descriptive data can be found via one access tool over another. If each technology is a stage in the evolutionary process, does the inclusion of descriptive data within a highly discoverable online tool, such as an archival management system, versus a paper-copy box list, imply that one group of archival records has greater value over another?

In a 2001 study, Szary investigates the potential transformation of archival reference services through the adoption of EAD. He suggests that the availability of standardised descriptions online will allow users 'to travel much further in their research unaided before they need to call in the specialised expertise of a reference professional'.[11] Although this hypothesis may be valid, it would be interesting to investigate the self-sufficiency of researchers relative to the myriad of tools used by archives, including EAD, databases and archival management systems, among others. In a similar study, McCausland discusses the effect of online-access finding aids on researchers and archivists through a comprehensive literature review. She concludes that mediation between archivist and researcher will continue; however, archivists will have to adapt reference services, as well as other archival functions, as researchers' needs change.[12] Given that much of the literature illustrates the need for archivist mediation, how far can we expect a researcher to progress with their research independent of the archivist? Will the ongoing evolution of reference tools eliminate the need for mediated access? Does archivist mediation introduce a bias into the reference process?

The International Council on Archives' Code of Ethics states: 'Archivists should promote the widest possible access to archival material and provide an impartial service to all users.'[13] It further states: 'Archivists should produce both general and particular finding aids as appropriate, for all of the records in their custody.'[14] The statements above require archivists

to improve and promote access to archival records. They also require that archivists have appropriate tools available to facilitate this access. In many cases, the researcher does not have the ability to conduct their own searches and review their own search results. Improved reference tools, such as accessible federated search tools, would reduce the need for archivist involvement in the reference process and as a result streamline the researcher experience.

Much of the literature focusing on specific reference tools centres on online access to archival descriptions, specifically online finding aids and EAD. Little has been written about other forms of technology, such as archival management systems and linked open data, and their effect on reference services. All of the tools that archivists use represent different forms of technology and exist on a continuum throughout the records creation process. This continuum represents the evolution of records creation and perhaps the reference process should be viewed in a similar context. Reference is not a static process. It is a process that changes as records change, as reference requests change, as reference tools change and ultimately as archivists change.

Yakel suggests that both the reference process and reference tools need to change to meet researcher needs. In 2004, she conducted a usability study of an EAD interface with six participants. Her findings highlight the need to eliminate barriers to researchers' understanding of finding aids. This could be accomplished by reducing archival jargon and minimising any dependence on users' prior knowledge of archival hierarchical structures.[15] She recommends providing virtual reference services alongside EAD descriptions as well as integrating user-based design principles into EAD interfaces to help researchers navigate these systems.

Szary argues that the contextual information about record creators is paramount to the understanding of the records themselves. He suggests that Encoded Archival Context (EAC) and including 'separate but linked bibliographic and contextual descriptions' will document the 'often complex web of relationships amongst records creators, functions, subjects, and the materials'.[16] Much can be done with EAC to increase online access and sharing of information. For example, Pitti et al. created EAC-CPF records by extracting information from EAD finding aids. After inputting the EAC-CPF records into a database, they can visualise the connections of people, families and organisations associated with archival collections.[17] They suggest creating an archival cooperative to create, edit and distribute EAC-CPF records as a method to increase access to archival material. With wide implementation, this will have the potential to allow researchers to have a better understanding of the relationships between record creators and ultimately improve access to archival records.

Yakel proposes that archival reference services are a part of knowledge management and archivists should change the function of reference services from providing access to documents or information to a 'process of knowledge'.[18] She argues that expectations of access to archival records are changing and archivists need to address these changes. Examples include the decline of the reference room as the primary source for services and the anticipation of researchers' needs outside of business hours.[19] Technology will be required to implement Yakel's recommendations. How can archivists develop reference tools to foster self-sufficient researchers given that researchers expect some level of reference service outside of the reference room and outside of business hours? Will reference technology assist researchers in becoming self-sufficient? Tibbo suggests that archives' websites could fill the gap for remote users; however, 'simply providing access to materials by posting them on the web will not necessarily make them "accessible"'.[20] Archives' websites could serve many functions, with reference service being but one of these.

Duff, Yakel and Tibbo discuss the idea of 'knowledge' and investigate the knowledge and expertise required to be a reference archivist. They observe that current archival education does not focus on reference services and that archivists use knowledge obtained while conducting arrangement and description to provide reference services. They also suggest that further research is required to understand the archivist's impact on the researcher's experience.[21] Training in archival reference services is mainly conducted in, and is often specific to, one archival institution. Is there a need for standardised education in reference services?

Methodology

Identification of participants

In order to further our understanding of how archivists conduct reference services, we asked academic archivists to report on various details relevant to the provision of reference services within their institution's archives. We solicited participants through a call on the Canadian archives' listserv, ARCAN-L, in January 2016. Our call specifically requested participants currently working as professional archivists at Canadian academic institutions. We secured 19 individual participants from 15 Canadian universities.

Each participant was asked to complete a two-part survey. The first survey, which we will identify as the 'Institutional Survey', was designed to gain data on the participants' institutional practices (Appendix 1). For institutions where we had more than one participant, we asked for only one institutional survey to be reported. The second survey, or 'Data Collection Form', was completed each time the archivist answered a reference question over a six-week data collection period in March and April 2016 (Appendix 2). It should be noted that our surveys were approved by Western University's Non-Medical Research Ethics Board.

Definition of terms

The tools outlined below are multifunctional; however, for the purposes of this discussion we will refer to them as 'reference tools'. The following definitions were used within the surveys to describe reference tools available to archivists and to provide clarity to the participants. The definitions were provided to the participants prior to the start of the data collection period. These tools were selected because they were deemed the most likely to be found within academic archival institutions, based on our survey conducted in 2013.[22]

An Archival Management System (AMS) is a multifunction application that assists in the administration of archival tasks, such as accessioning and hierarchical description. It may also include content management capabilities.

A Box List is an inventory of the box contents for an accession with no archival arrangement or description. This inventory may be completed at the file or item level.

Encoded Archival Description (EAD) is a standard used to mark up (encode) finding aids that reflects the hierarchical nature of archival collections and that provides a structure for describing the whole of a collection, as well as its components.[23]

A Database is defined as information that is accessed and updated through software (a database management system) that has been organised, structured and stored so that it can be manipulated and extracted for various purposes.[24] Typically, these are created and

accessible within the organisation and are not publicly accessible. These do not fulfil all of the functions of an AMS.

A Finding Aid is a tool that facilitates discovery of information within a collection of records and a description of records that gives the repository physical and intellectual control over the materials and that assists users to gain access to and understand the materials.[25]

An Online Public Access Catalogue (OPAC) is a computerised database that allows patrons to search descriptions of materials in a repository's holdings.[26] This could be through the archives' website or the academic library's website.

Study limitations

Our study has two limitations of note. This study focuses solely on the reference activities of academic archivists, that is, those currently employed at post-secondary institutions within Canada. It did not gather data from archivists employed outside that sphere and as such, the data we have gathered about that particular group of people and their sponsoring educational organisation may not reflect the experiences of that of public, ecclesiastical or corporate archives, among others. We made the decision to narrow our study to this group for several reasons. Firstly, academic archivists are likely to receive similar types of reference inquiries, which are most often limited to research collections or university records and perhaps warrant a similar search-approach to the inquiry. Secondly, academic archives exist in every province of Canada, and often there are multiple institutions within a given geographical area. While these archives vary in staff size and collection extent, by the sheer virtue of existing within an academic institution they are likely to have access to various forms of technology and tools to facilitate all aspects of their work.

The second limitation to this study is that we relied on participant self-reporting to gather data. It was impossible to observe the reference work of this many respondents, so self-reporting was necessary.

Data collection and analysis

Our surveys were created using Qualtrics software and both surveys were distributed to participants via email. Each participant was assigned a unique ID number to use while completing the survey. All responses were anonymous. Fourteen respondents provided us with data on the reference tools within their institutional archives.[27] We asked 17 questions that focused on the technology and tools archivists employed to access their collections. Questions focused on the availability and accessibility of typical sources of collection information, as well as the perceived level of completeness of the overall collection described within a specific tool or technology. We gathered data on respondents' perceived barriers to reference service and opinions on which tools they wished they had access to at their institution, and why.

Over the six-week data collection period, the 19 participants completed 242 responses while conducting reference services. We asked eight questions that focused on their process for answering the reference questions, focusing specifically on the tools used to facilitate reference services. It should be noted that two participants completed the institutional survey but did not complete the data collection forms for their reference activities.

Basic data analysis was completed using Qualtrics and themes were identified. Further quantitative data analysis was completed using the software R. Qualitative responses were coded by the investigators based on an agreed-upon process.

Findings

Frequency and order of tool use

Reference tools are used by archivists to facilitate user inquiries and access collections. We looked at which reference tools are most frequently used and if there is a particular pattern to the tool use. Participants were asked about their use of the following tools: Finding Aids, Archival Management Systems, Box Lists, Online Public Access Catalogues (OPAC) and Other (Table 1).

Although finding aids were the tool most frequently used to answer reference questions, the data also reveals that archivists tend to use multiple tools when answering a reference question. It could be, as Szary argues, that multiple tools are required because 'in the transition from one descriptive methodology to the next, there has never been a comprehensive migration of information into the next system'.[28] The search through multiple tools is required to review all of the available holdings because the descriptions were created in different tools depending on the dominant system at the time.

Participants were asked to provide the sequence of the tools used to answer the reference question, be it first, second, third and so forth (Table 2). This question assumes that an archivist will first search where they expect to successfully find the information they need. The 'Other' category was the most frequently selected option for the first tool used. Survey participants were given the option to provide a specific answer when they selected the Other category and we received a wide variety of responses. The other section will be discussed in greater detail later in the article. Finding aids were chosen first 60 times and archival management systems were chosen first 59 times.

A wide variety of tools are used to facilitate reference services and many archivists use multiple tools to find relevant information. Tibbo states that 'people tend to base their information seeking behaviour on what they expect to find'.[29] If this is the case, can one argue that archivists use multiple tools because they do not expect to find the information they

Table 1. Frequency of tool use.

	AMS	Box Listing	Finding Aid	OPAC	Other	Totals
Frequency	74	48	95	59	88	364
Percentage	20.33%	13.19%	26.10%	16.21%	24.18%	100%

Table 2. Sequence of tool use.

	First	Second	Third	Fourth	Row Summary
AMS	59	7	7	1	74
Box Listing	17	21	9	1	48
Finding Aid	60	31	3	1	95
OPAC	45	13	1	0	59
Other	66	15	6	1	88
Total	247	87	26	4	364
Percentage	67.86%	23.90%	7.14%	1.10%	100%

need in any one tool in particular? This calls into question the validity and completeness of the metadata in a singular tool.

Are there any patterns of behaviour in regard to the order in which archivists select reference tools to facilitate reference services? There are patterns of behaviour within individual responses, but there is no overall pattern of behaviour when comparing participants' responses (Table 3). For example, participant 15 always chose the OPAC first; finding aids, second; box lists, third; and archival management systems, last. Participant 12 always chose finding aids first and chose either box lists or other, second. This indicates that archivists have personal preferences concerning which reference tools they use and that there is no overall pattern of use. There may be many factors influencing an archivist's selection of reference tools. These may include the availability of tools; the quality of each tool; archivist knowledge of the most appropriate tool; comfort level operating a specific reference tool; or a history of using specific tools while conducting reference services. We will provide a more detailed analysis on these ideas later in the paper.

Other tools

The Other category encompasses a wide variety of tools, such as internal databases, card catalogues, paper files, websites, colleagues' knowledge, and email, among others. The tools in this category were self-identified by the participants. The tools indicated in the other category include a mixture of electronic tools, such as databases, and analogue tools, such as card catalogues. The most commonly identified tool in this category, with 42 responses, was internal databases, meaning databases internal to the archives and mediated by the archivist. On 13 occasions, archivists went directly to the records, and on 12 occasions, archivists used external databases, meaning databases external to the archives and in these instances mediated by the archivist. Examples of external databases include other archival institutional databases as well as archives associations' union databases.

All of the tools mentioned in this category required mediation by the archivist to answer the reference question and many of these tools are inaccessible to researchers. Bearman states that information is the only 'resource increased by use'. He goes on to say that we need to develop ways to facilitate and capture different forms of use, and to become 'archives without walls', making our resources widely available in ways that best facilitate their use.[30] Making these tools accessible to researchers may increase use of the records and decrease required archivist mediation. Why are archivists not making these tools accessible? The most common reasons might include the quality of the description and the lack of contextual description.

Finding aids

Of the 14 respondents, 13 (92.86%) had access to finding aids. These were available in a variety of formats, including paper, word-processing documents, EAD, PDF and others, which were reported as MARC and HTML. In addition, one respondent referred to AtoM as a finding aid; however, we consider this to be an AMS. One respondent reported having only paper-copy finding aids publicly available, with all other respondents reporting at least one electronic format available. The same percentage of respondents reported having

Table 3. Sequence and frequency of tool use by participant.

Respondent ID	Frequency each ID used tool order																			Total
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	18	20	21	22	23	
No tool	1	2	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	**7**
Other only	1	16	0	3	2	0	0	0	0	0	2	3	0	11	0	5	1	2	0	**46**
OPAC only	0	0	0	1	0	0	1	0	0	0	6	0	0	3	1	0	0	1	4	**17**
OPAC to Other	0	0	0	4	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	**7**
Other to OPAC	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Finding Aid	1	0	0	0	3	1	0	2	4	3	4	3	0	2	0	0	0	0	0	**23**
Finding Aid and Other (both ranked first)	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**3**
Finding Aid to Other	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Finding Aid to OPAC	0	0	0	2	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	**6**
Finding Aid (ranked second, no first)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Other to Finding Aid	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	0	1	1	0	**7**
OPAC to Finding Aid	0	0	0	1	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	**5**
OPAC to Finding Aid to Other	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
OPAC to Other to Finding Aid	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Box Listing	4	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**6**
Box Listing to OPAC	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Box Listing and Finding Aid (both ranked first)	2	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**6**
Box Listing and Finding Aid and Other (all ranked first)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Box Listing to Finding Aid	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	**3**
OPAC to Box Listing	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Finding Aid to Box Listing	0	0	0	0	0	0	0	1	11	2	2	0	0	0	0	0	0	0	0	**16**
Finding Aid to Box Listing to Other	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
Finding Aid to Box Listing (ranked first and third)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
OPAC to Finding Aid to Box Listing	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**3**
AMS (only)	0	31	0	0	2	0	1	0	1	0	0	0	0	1	1	2	0	0	1	**41**
AMS and Other (both ranked first)	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
AMS to Other	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**3**
AMS to OPAC	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**2**
AMS to Finding Aid	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	**4**
AMS to Finding Aid to OPAC to Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	**1**
AMS to Box Listing to Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	**1**
AMS to Finding Aid to Box Listing	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	**4**
Other to AMS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
OPAC to AMS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	**1**
OPAC to AMS to Other	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Finding Aid to AMS to Other	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
OPAC to AMS to Finding Aid	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Other to AMS to Finding Aid to Box Listing	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
OPAC to Other to AMS	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
Other to OPAC to AMS	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
OPAC to Finding Aid to AMS	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Other to OPAC to AMS to Finding Aid	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Finding Aid to Box Listing to AMS	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
OPAC to Finding Aid to Box Listing to AMS	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**
Total	13	54	2	31	12	3	4	3	27	7	23	7	2	26	2	12	2	4	7	**241***

*One participant did not fill out this question in the survey. Bold numbers are the totals for each row.

their collection described in a database as well as an OPAC. These were not necessarily the same respondents.

Survey respondents indicated that finding aids were the most frequently accessed tool; however, they are not the first tool consulted when conducting reference. Three of the nineteen respondents indicated that they always used a finding aid first when answering a reference question. Is there a disconnection between the resources available and the preferences of individual archivists? Turnbaugh has suggested that archivists produce finding aids that are either ignored by users or too difficult to use and therefore irrelevant.[31] Although Turnbaugh's assertion that researchers ignore finding aids may be correct, our data shows that archivists use finding aids, as they were the most frequently used tool. There are many benefits to finding aids, such as the detailed level of description contained within them; the fact that finding aids are a well-known traditional tool that is common across all archival institutions; and that finding aids can be easily made available to researchers, both online and in paper formats. However, finding aids do not support federated searching and they often require mediation between the researcher and the records. Even with the availability of finding aids, in many cases archivists still need to use multiple tools to assist researchers.

Archival management systems

Perhaps most surprising is that 8 of the 14 respondents (57.14%) did not have holdings in an archival management system. This number could help explain why most of these archivists are using multiple tools for access to and discovery of their institutional holdings. Our respondents reported several examples of AMS software: ICA AtoM; Minisis M2A; Inmagic DB–Textworks; Combination of ICA AtoM–Archivematica and AIS (reported as an in-house FileMaker database); and Drupal (custom install). Survey respondents ranked archival management systems as the third most frequently accessed tool. This highlights two concerns that require further discussion: having access to an AMS but not using it; and not having access to an AMS at all.

The critical question is, if an archivist has access to an AMS, why would it not be the first point of access for archival material? There may be many reasons for this. Perhaps the information was not available via an AMS and could be found in another tool. It could also be an issue of personal preference or comfort with the AMS. It may also be that the archivist questions the quality of data and information contained within the AMS and as a result must consult more than one tool. An AMS is often the most recent tool acquired and legacy data may not be brought forward.

AMS have a degree of flexibility that is not found with finding aids or other reference tools; however, the quality of description may be an issue. In an AMS, it may be easy to omit pieces of descriptive information during the data entry process. Some archivists may have the attitude of doing it later in terms of data entry and detailed description in an AMS. This devalues the AMS and could possibly be an impediment to federated searching. It then compromises the value of the reference tool. This in turn may affect the level and frequency of use of an AMS.

The second critical issue is that a significant number of responding institutions do not have access to an AMS and this also merits discussion. Why are archival management systems not a standard tool in all archives? Technology has become an integral part of some aspects of archival practice but perhaps not integral to all aspects of professional work. Is

this a sign of the value that the archival profession places on this particular tool or is this the result of resource constraints?

Online public access catalogues and box lists

The OPAC was ranked second from last in terms of frequency of use. Eight institutional respondents indicated that their archival descriptions are available to the public via an OPAC and six institutional respondents indicated that their archival descriptions are not available to the public via an OPAC. Academic archives are usually part of the institution's academic library system and, as a result, high-level descriptions are often found in the library OPAC. They can also exist in the front end of an archival management system. Other tools are still necessary to obtain more in-depth descriptions. This could account for its low ranking.

Although all of the respondents had access to box lists, this tool was selected last in terms of frequency and order of use. This is surprising because respondents indicated that the vast majority (between 61 and 100%) of their holdings were available in box content lists. This could speak to the functionality of the box list. Archivists are perhaps finding that the other tools have greater ease of use, and they thereby largely ignore box lists despite the fact that they could have a high level of success finding the information they need.

Decision-making

We asked participants to identify the reason for selecting their first tool: 56% of our participants stated that the completeness of data was their main reason, 29% stated ease of use, 8% stated 'other' and 7% stated time. One of the comments that appeared 10 times was that the archivist used multiple tools during the reference process because all of the information required was not in the same tool or the archivist did not trust the information within the tool and therefore had to use multiple tools to verify the information. Another theme that emerged within the other category is the role of archivists' knowledge: six participants stated that they knew where to find the answer and that was their primary reason for selecting the tool. In addition to this other category, 10 participants indicated in the comments section of our survey that they used their own knowledge to answer reference questions. Another theme that emerged in the comments was that the tool was selected because the inquiry was a previously answered request. This is very similar to archivists' knowledge; however, it indicates that archivists keep track of reference requests. This illustrates that an archivist's knowledge plays an important role in facilitating reference services.

Reference question completion time

The participants were asked to document how long it took to complete the reference process: 25% stated under 10 minutes, 40% between 11 and 30 minutes, 21% between 32 and 60 minutes and 10% over 61 minutes. A recurring comment expressed in the survey was that reference took a significant amount of time because the archivist had to manually search boxes for relevant files. It should be noted that the term 'significant time' is relative to each respondent. Eighty-seven per cent of the reference completed by our participants was completed in under one hour. Are archivists accustomed to spending a specific amount of time on reference? There may be institutional policies in place that limit the amount of time an

Table 4. Length of time for reference inquiry by tool.

	0–10 minutes	11–30 minutes	31–60 minutes	61 minutes or more	No response
AMS	16	28	19	10	1
Box Listing	10	27	4	7	0
Finding Aid	22	41	18	12	2
OPAC	18	21	18	3	1
Other	26	33	19	8	2
Total	92	150	78	40	6
Percentage	25.14%	40.98%	21.31%	10.93%	1.64%

archivist may devote to a specific reference question. Very little has been written about how much time archivists spend on reference questions with which to compare our findings.

Is there a relationship between the length of time and the tool used to answer the reference question? We grouped our responses by tool to determine if the length of time required to assist a researcher was influenced by that tool (Table 4). The majority of reference questions were answered in under 30 minutes and most reference questions were answered in between 11 and 30 minutes, regardless of what tool was utilised. If all tools facilitate reference in the same amount of time, why would archivists, with limited resources, migrate descriptive data to other tools? Perhaps time is not the determining factor, but streamlining the workflow and achieving efficiencies in the provision of reference services should be the end goal.

There does not appear to be a relationship between the location of the reference inquiry and the length of the reference inquiry. Our participants stated that 57% of reference occurred via email, 28% in person, 13% over the phone, 2% other and 1% via virtual chat. For every location, the majority of questions were answered in between 11 and 30 minutes. It is interesting to note that the longest amount of time spent on reference inquiries related to those that took place via email. Seventy-two per cent of reference occurred remotely, with over half of the responses indicating that the reference process occurred online. None of our respondents indicated that they had access to virtual chat software in the institutional survey. It is also interesting to note that virtual chat, with two responses, received the same number of responses as physical mail. Although virtual chat functions have been adopted by other similar information professions, such as academic librarians, it does not seem to be as widely used by academic archivists. Previous research studies mention the need for virtual chat services.[32] Our results indicate that there appears to be a disconnect between what is being said in the literature and what archivists are doing in practice.

Barriers

Thirteen participants provided us with comments describing the barriers they encountered when conducting reference service and, as a result, some general themes emerged, such as search capacity limitations, unprocessed records and staffing. A majority of comments focused on search capacity limitations. Participants lamented having 'too many databases' and that 'not having an administrative database means we have to consult multiple locations to identify and locate applicable records'. An extension of this is the notion that the archivist does not know which tool could contain the collection information they seek: 'as there are multiple systems it is not always clear where information on specific fonds–collections can be found.' Archives should explore tools that enable federated searching or that enable migration of metadata from multiple tools to one search tool.

Another barrier identified by our participants was unprocessed records. One of our participants stated that 'a large portion of our materials have not been described to any level and are unavailable'. This was a recurring theme throughout the comments. Additionally, there were five comments related to staffing barriers. The archivists reported archives that were understaffed, leading to little time either for reference duties or for describing archival records. One archivist reported 'lack of staff … which can make it difficult to respond to reference requests in a timely manner while balancing all the other duties and responsibilities'. It could be argued that the true obstacle fuelling the feedback is that the archives lack financial or staff resources. This is not surprising and it supports Duff and Fox's idea that resources are linked with the provision of reference services.[33] It impedes the provision of reference services when complete archival descriptions are not available within reference tools.

We also asked the participants to identify barriers to obtaining reference tools. Again, the lack of staffing and financial resources were reported as the primary barriers to the implementation of new tools in their academic archives. This is not a surprising finding as the allocation of limited resources is a struggle for most archival institutions. Archivists should explore open-access tools as lower-cost options to addressing these issues.

Themes

Several themes are apparent from the data we collected; the common thread throughout is that of archivist mediation. It is common for banks, grocery stores and even libraries to have self-service kiosks and online self-service options available to users. How archives may fit into this service model remains to be seen. Traditionally, mediation was a necessity for archives and perhaps archivists are comfortable with mediation because of this practice. Implementing technology to enhance reference services may minimise the need for mediation.

A major theme that came to light and requires discussion is the role that the archivists' knowledge plays in reference services. Many participants stated their memory or knowledge was a primary tool used when describing how they conduct reference. In most cases, archivists are experts in their collection and this expertise is needed to navigate the various tools required to conduct reference services. Reference questions are often subject specific and archival descriptions found in reference tools are often collection specific. In many cases, the archivist's knowledge is required to reconcile the subject-based question with collection-based descriptions. Szary states that:

> Archival reference service is still very much a serendipitous activity that depends heavily on the knowledge and skill of the reference staff. Reference staff have served as gatekeepers to holdings, not necessarily out of a desire to retain control, but because the access mechanisms have been so idiosyncratic and the detailed knowledge of holdings so specialized that users require guides who can lead them through the labyrinth.[34]

How do we reconcile the requirement for archivist mediation with our researchers' desire to become self-sufficient while conducting research, as indicated in the literature? Many of the tools used by archivists to conduct reference services are only available internally to the archives and, in many instances, reference requires an archivist's knowledge of the collection to navigate the request. Archivist mediation will always be required owing to the nature of archival records; however, will increasing the availability of reference tools to researchers

lessen the amount of mediation required? Archivists tend to make only descriptions available to researchers when they are completed, even if initial box lists or other forms of preliminary descriptions are available. Making these internal tools available to researchers is one way archivists could foster primary-source information literacy skills. The library community places significant emphasis on information literacy. This gives researchers, particularly students, the ability to conduct research across the resource spectrum regardless of material format. This includes archival primary sources. When an archivist must mediate every reference inquiry, it hinders the development of effective information literacy skills.

Related to this idea of archivist knowledge and archivist mediation, is the lack of federated search capabilities at academic archives. This is especially fascinating because when we asked our participants if there was a tool that they wished they had access to, 50% of the responses referenced a federated search tool. This goes back to the point that no one tool has all of the information needed and archivists need to reference multiple resources to find the information they seek. The need to migrate descriptions and other reference resources to one tool is a large task. Additionally, migrating descriptions is a task that must compete for staff and financial resources with all other archival tasks. Is this a priority?

We are seeing many institution-specific tools in regard to reference services. Many of the tools are created in-house and are not created specifically for archival descriptions, such as spreadsheets and library catalogues. Many of the tools indicated in the Other category lacked contextual information, such as provenance and information about the record creator, among others. We are seeing a trend of relying on available tools. Archivists are creating and using tools in-house to address their reference needs. This suggests that one tool does not represent all of their holdings. Yakel states that:

> representational artifacts (such as finding aids, inventories, and index cards) form larger representational schemata that are implemented in archives using a variety of technologies or tools. In the evolution of these technologies, archivists have moved through a number of different genres in attempting to discover (recover) the most appropriate representational systems for archival and manuscript collections.[35]

The results of our survey support Yakel's argument in that our participants use several tools because no one tool adequately represents their holdings.

Future directions

Several areas require additional exploration and analysis. It would be interesting to further investigate the information-seeking behaviour of archivists. Do archivists change their patterns of behaviour based on the nature of the reference question? One would assume that an archivist would tailor their search to the specific type of question received. Different resources could potentially be used for different types of questions. Further, there is a need to investigate the factors that are considered when archives select and implement reference tools.

Technology evolves rapidly. Is the archival profession evolving as rapidly as technology? There is very little research which looks at the relationship between technological skills and archival practice. Is lack of technological skill a barrier to adopting new technologies? Do archivists truly have the technological skills to implement new tools to provide reference services? Do the professional associations place enough emphasis on the development of

technological skills? The relationship between technological skills and archivist competency needs to be explored in more detail.

An additional area that requires exploration is the relationship between the container (the reference tool) and the content of the container (the archival description). Does the nature of the container affect the content? By its very nature, a container imposes limitations on the content of the container. What is the impact on the archivist and the researcher? Tools that limit the impact of the container, such as linked open data, are in their infancies and have not been fully adopted by archival institutions. It will be interesting to see the effect of linked open data on reference services in the future. We also must examine if archivists approach reference for born-digital records differently than for analogue formats, such as paper and photographic records. Does the format of the record ultimately affect the type of tool used?

Conclusion

Is there a standard approach to the use of tools in the provision of reference services? This question needs to be examined in more detail across the continuum of archival practice as well as across different types of archives. This study is intended to form the basis for a preliminary discussion of this question and act as a foundation for future research in the areas of the information-seeking behaviour of archivists and reference services.

Archivists are creating internal reference tools that speak to the needs of the archivists and their collections and not necessarily to the needs of researchers and the changing nature of the archival record itself. Multiple tools are often required to find information about archival resources. Accessible federated search tools within an institution would help streamline the reference process and improve the services that we provide to our users. To achieve this there needs to be a commitment to implementation and ongoing, consistent support of federated search tools. Consortia and increased collaboration need to be considered as possible ways of increasing the ability to provide federated search tools within an institution and across institutions and access to archival resources. Access is key and the key to access is improved search and retrieval tools.

We identified barriers to the provision of reference services including resource constraints, unprocessed records and insufficient reference tools. These barriers are also interconnected. Financial limitations result in staffing barriers, which result in a backlog of unprocessed records. One barrier cannot be separated or distinguished from the rest. The perceived lack of adequate financial resources identified in the survey will have a trickle-down effect on researchers and the reference process. Therefore, it is critical that archives have access to stable and long-term financial resources from their funding bodies.

Staffing barriers are also intensified by the fact that mediation is a necessity because of the nature of the reference tools themselves. It is difficult to conceive of a time when the archivist will not have to intervene in the research process if archives continue to make use of tools that are ultimately created for the archivist and not the user. Researcher-driven tools are imperative to a user-centred reference philosophy. As a profession, we must not settle for substandard reference tools that lack a long-term strategy for implementation, integration and use. Archivists need to look for new ways to connect our researchers to the records while improving researcher self-sufficiency. Archives are meant to be used and, as a profession, we should support a user-centred approach to reference services.

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Appendix 1. Institutional Survey

Please enter your three-digit survey respondent number.

Are you a professional archivist?
- ❍ Yes (1)
- ❍ No (2)

Do you have access to finding aids?
- ❍ Yes (1)
- ❍ No (2)

Finding aids are available in many different formats. In what format are your finding aids publicly available? (Check all that apply)
- ❑ Paper (1)
- ❑ Electronic word processing documents (2)
- ❑ EAD (3)
- ❑ pdf (4)
- ❑ Other (5) _____

How much of your collection is described with finding aids?
- ❑ 0–20% (1)
- ❑ 21–40% (2)
- ❑ 41–60% (3)
- ❑ 61–80% (4)
- ❑ 81–100% (5)

How much of your collection is described with box content lists?
- ❑ 0–20% (1)
- ❑ 21–40% (2)
- ❑ 41–60% (3)
- ❑ 61–80% (4)
- ❑ 81–100% (5)

Do you have your holdings in an archival management system?
- ❍ Yes (1)
- ❍ No (2)

Please provide the name of the Archival Management System.

Do you have your holdings in a database?
- ❍ Yes (1)
- ❍ No (2)

Do you have access to an Online Public Access Catalogue (OPAC)?
- ❍ Yes (1)
- ❍ No (2)

Are your archival descriptions available to the public via an Online Public Access Catalogue (OPAC)?
- ❍ Yes (1)
- ❍ No (2)

What type of software is available to you while conducting reference services? (Check all that apply)
- ❑ word processing (1)
- ❑ content management (2)
- ❑ spreadsheet (3)
- ❑ virtual chat reference (4)
- ❑ inventory control (5)
- ❑ other (6) _____

Are there any barriers that you encounter when conducting reference services? An example is lack of financial resources to purchase appropriate technologies to assist with reference.
Is there a tool that you wish you had access to but currently do not?
- ❍ Yes (1)
- ❍ No (2)

If yes, please elaborate on why you want this tool.

If yes, please explain why you do not have access to this tool.

Appendix 2. Data Collection Form

Please enter your three–digit survey respondent number:

Describe the reference question:

Number each tool in the order in which you used it to answer the reference question. 0 = did not use
_____ Archival Management System (1)
_____ Box listing (2)
_____ Finding Aid (3)
_____ OPAC (4)
_____ Other (please specify): (5)

Looking at your answer to the above question, what was the main reason for making your first choice?
❍ Ease of use (1)
❍ Time (2)
❍ Completeness of data (3)
❍ Other (please specify): (4) _____

How long did it take to complete the reference process?
❍ 0–10 minutes (1)
❍ 11–30 minutes (2)
❍ 31–60 minutes (3)
❍ 61 minutes or more (4)

Where did the reference interaction take place? Check all that apply.
❑ In person (1)
❑ Phone (2)
❑ Email (3)
❑ Virtual Chat (4)
❑ Other (please specify): (5) _____

Indicate if the tool was helpful or not helpful.

	Helpful (1)	Not helpful (2)	Did not use (3)
Archival Management System (1)	❍	❍	❍
Box listing (2)	❍	❍	❍
Finding Aid (3)	❍	❍	❍
OPAC (4)	❍	❍	❍
Other (as you specified in the third question): (5)	❍	❍	❍

Please provide any additional comments: