RECORDS ON THE GO:

THE INTERSECTION OF MOBILE DEVICES AND ARCHIVES

by

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Abstract

Given the pervasiveness of mobile devices in our environment, it follows that they are increasingly being used as a primary mode of archival records creation. This enormous shift in the mode of communication should be appropriately reflected in archival holdings and in archivists' approaches to their craft. Yet, despite the widespread and multilateral impacts of these technologies across all of the core archival functions, this topic has received little attention from archival scholars. This thesis is an attempt to fill that void in the literature by investigating the reasons for this oversight and by examining the many impacts at the intersections of networked mobile devices and archives. The immense democratizing, culture-building, social, cultural, and political power of mobile devices should be adequately represented in archives. Grounded in the postmodern paradigm of archiving, this project suggests that the pervasiveness of networked mobile devices, and the resulting born-digital, "born-networked" records they are being used to create, should be better accounted for in the archival (and by extension historical) record. While this task involves coming face to face with some unique and tangible challenges from both technical and conceptual standpoints, making intellectual and practical space for networked mobile devices and born-mobile records in archives can have countless positive consequences for creators, archivists, and users of records, and can help to enact a more inclusive, more representative archive.

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I am also grateful to Professor Tom Nesmith for his encouragement and for introducing me to the inspiring thought that archives are everywhere and that all things are archival, which has allowed me to see the world and this profession in new ways.

I am grateful to Tim Berners-Lee, the inventor of the World Wide Web, for his indirect yet sweeping role in my life. Thanks to his work, I can ponder the impacts of internet-connected mobile devices on archives and peruse memes about cats—sometimes simultaneously!

Last but not least, I thank, from the bottom of my heart, my family, my dear friends, and especially Zaw, for their constant love, unwavering encouragement, patience, and logistical and moral support as I worked on this thesis.

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Dedication

This thesis is dedicated to the memory of my father, Tadeusz Dąbroś, and to the future of my daughter, Mila Tin Dąbroś Aungkyaw, whose lives just barely intersected but whose intersections with mine have nourished and enriched it.

Introduction

When I first began my research into this topic, I hoped to examine examples of archives that are incorporating records made using networked mobile devices. It piqued my interest to think about how the records born out of the increasingly immersive and all-encompassing digital environment (itself largely a result of the growing pervasiveness of mobile devices in our lives) were making their way into archival repositories and institutions. I pondered what new kinds of realities, relationships, and social and cultural trends they may help future historians and scholars of human cultures and societies to reveal.

However, it very quickly became apparent that, even if archivists were starting to turn to born-mobile records as a source of documentation that should be preserved, they were not distinguishing these from the other born-digital records in their collections, making the proposed task difficult. It became clear that even if archivists may find value in preserving these records, they were not valuing them based on mode of creation. This makes sense, in a way. Archives have never been overly concerned with the mode of production of records; although this aspect of the record helps us to make better sense of its context of creation and its materiality, for most analogue records, it is implied by the material form of the record and tends to take second stage to its content. Likewise, for electronic records, before the explosion in the popularity of smartphones, tablets, and other such networked portable computers, it was generally safe to assume that they had been created via stationary (or mostly stationary) computers such as desktops and

laptops; the focus was centred around the digital formats of the files rather than on the mode of their creation.

Thus, I readjusted my task to better reflect this reality, and my guiding questions became: Why aren't archives distinguishing born-mobile records as such? Why is it useful to do so? What value might it add to distinguish them from analogue and other born-digital records, and what may we gain as archivists to make this distinction? Finally, how may such a distinction be a step towards responding to the underrepresentation of born-mobile records by archives, and how can such a response help to enact a better archive for all—records creators, archivists, and users alike?

My hope is that, by getting at the heart of this issue, we can start to address the underrepresentation of these records in archival holdings, and by extension, the underrepresentation of the people, relationships, and social systems they represent or reflect. A significant impact of the rapidly growing global pervasiveness of mobile devices (in particular, smartphones) is that they have become a powerful and critical tool in the democratization of communication by allowing almost anyone with a mobile device and an internet connection to add their voice—and their records—to society (for better or for worse)[1]. This democratization of communication has immediate, tangible, and far-reaching lateral effects, and should be appropriately reflected in the historical

[1] It is worth noting here that not all responses of scholars to the democratization of the historical record have been purely optimistic. For example, notable digital historian Roy Rosenzweig has presented a measured, cautiously hopeful approach that acknowledges that the overabundance of digital records that this democratization contributes to can be overwhelming and paralyzing, while articulating the need for improved digital literacy and critical assessment of digital sources as part of the digital historian's craft. See Roy Rosenzweig, "Scarcity or Abundance? Preserving the Past in a Digital Era," *The American Historical Review* 108:3 (June 2003), 755–756. See also Daniel J. Cohen and Roy Rosenzweig, *Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web,* (Philadelphia: University of Pennsylvania Press, 2006): 3, where the authors situate themselves between the "wild-eyed optimists" and the "gloomy pessimists" in the camp of the "techno-realists," a camp which I too align myself with.

archive, which is represented in large part by archival holdings. The archival profession is entrusted with the very complicated, subjective, and responsibility-laden task of constructing the historical record via the records it chooses to collect, with appraisal being one of the most difficult and critical functions of the profession. Given Terry Cook's estimate that only between "one and five percent of all institutional records created will survive as archives," and that "for non-institutional private-sector records, the figures are considerably lower," the need to look at mobile devices as a critical source of archivally valuable records becomes especially evident—since the record that remains is already only a very small portion of what was created, the importance of looking to a myriad of potential sources can help ensure that what *is* kept contains a fair balance of what was created that is worth permanently keeping.[2]

The postmodern paradigm calls on archivists to recognize and value not only the records (and by extension, histories) of corporations, institutions, governments, and bureaucracies, but also to give representation to individuals and to a multitude of voices and experiences. It also calls on archivists to be aware of how their own subjectivities inform their work across all the core archival functions.

In the archival field, the trend towards a postmodern paradigm follows the larger postmodern turn that took hold in the 1970s and 1980s across other fields of study and epistemes, including history, philosophy, social and cultural theory, and the fine arts. In the field of history, the cultural turn resulted in an increased focus on labour, women's, oral, and ethnohistory, which challenged the grand, progress-focused, and nation-building narratives presented by positivist scholarship, and which brought to light previously

[2] Terry Cook, "'We Are What We Keep; We Keep What We Are': Archival Appraisal Past, Present, and Future," *Journal of the Society of Archivists* 32:2 (October 2011): 174.

marginalized voices. As part of the larger postmodern shift, scholars of various disciplines began to interrogate and reject the positivist approach to knowledge-seeking and to the understanding of history and truth. They took issue with the longstanding and entrenched notion that a single, monolithic, objective, attainable, and verifiable truth existed, could be found, and could be presented unproblematically, positing that seeking such a truth was unproductive and unattainable. The postmodern paradigm suggested that one cannot witness or interpret an event from an impartial or disinterested point of view, given that every individual makes sense of events and experiences in ways different from others, and that all accounts of the present or past are necessarily informed by and constructed from differing points of view—including the task of archiving. A host of archival scholars, including Terry Cook and Tom Nesmith at the University of Manitoba, as well as Brien Brothman, Adrian Cunningham, Mark Greene, Verne Harris, Eric Ketelaar, Randall Jimerson, and Joan Schwartz, contemplated how the thinking and approaches of archivists and archival scholars would change under the postmodern paradigm.[3] The predominant view was that bringing an awareness of one's own subjectivity to the task of archiving would make it a more challenging, but ultimately more honest and realistic, exercise.

[3] For an excellent summary of the developments in thinking about postmodernism in archives, see Terry Cook, "What is Past is Prologue: A History of Archival Ideas Since 1898, and the Future Paradigm Shift," *Archivaria* 43, (Spring 1997): 17–63, and "Archival Science and Postmodernism: New Formulations for Old Concepts," *Archival Science* 1:1 (March 2001): 3–24. Tom Nesmith eloquently presents the complexities and nuances of postmodernism in archivy in a number of his works, including "Seeing Archives: Postmodernism and the Changing Intellectual Place of Archives," *The American Archivist* 65 (Spring/Summer 2002): 24–41; "Reopening Archives: Bringing New Contextualities into Archival Theory and Practice," *Archivaria* 60 (Fall 2005): 259–274, and Tom Nesmith, "Documenting Appraisal as a Societal-Archival Process: Theory, Practice, and Ethics in the Wake of Helen Samuels," in *Controlling the Past: Documenting Society and Institutions – Essays in Honor of Helen Willa Samuels,* ed. Terry Cook (Chicago: Society of American Archivists, 2011), 31–50.

More aware of their own subjectivities, archivists began to acknowledge their biases and insert themselves into their work as interested parties. Everything from how these biases affect collecting mandates or appraisal practices, to how they affect archival description and processing, was questioned. Furthermore, as Nesmith, Harris, Jimerson, and others pointed out, through their intense mediating work, archives help to further construct knowledge, culture, and societies. They are also sites of agency and immense cultural and political power.[4]

Echoing the social turn in the field of history, a central goal of the postmodern archive became to expand its representation to include more of the records and stories of everyday actors to balance out the preponderance of records and stories of those acting from positions of dominance and privilege. As the postmodern archivist and scholar well knows, recordkeeping has historically been the domain of the rich and powerful, and this privilege is reflected in archival holdings via records that document the actions and work of the dominant forces in society, as well as in archival practice.

Archivist Jordan Bass writes that "much archival method, and the corpus of archival theory from which it is derived, have implicitly ignored glaring discrepancies between records created by governmental and other corporate bodies for purely administrative purposes and those records born of the intimate and otherwise informal everyday needs and desires of private individuals." [5] As a result, the histories of institutions, governments, corporations, and individuals or groups with power are predominant in archival holdings,

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[4] Nesmith, "Documenting Appraisal;" Randall Jimerson, "Archives for All: Professional Responsibility and Social Justice," *The American Archivist* 70, (2007): 252–281; Verne Harris, *Exploring Archives: An Introduction to Archival Ideas and Practice in South America,* (Pretoria: National Archives of South Africa, 2000).

[5] Jordan Bass, "Getting Personal: Confronting the Challenges of Archiving Personal Records in the Digital Age," (MA thesis, University of Manitoba, 2012): 11.

while the records and documentation left behind by everyday actors as they enact agency and engage with and contribute to society are less likely to be solicited, acquired, and preserved. This makes mobile devices an especially important source of records that reflect people who have traditionally been left out of archives and out of history in favour of more powerful and dominant figures, institutions, and narratives. This includes ethnic or cultural minorities, women, gender and sexual minorities, people of lower economic classes, children and youth, those living in remote communities, as well as those who identify with various underrepresented or marginalized subcultures.

Furthermore, as explained in Chapter Two, mobile devices are increasingly central to life in the private sphere, so that the records they help to produce reflect the depth and breadth of personal experiences of everyday actors—what archival scholar F. Gerald Ham referred to in 1975 as the "broad spectrum of human experience."[6] For historians interested in tracing cultural, social, and political events or developments, and scholars studying people and their relationships and interactions with others or within larger social systems, personal and non-institutional records hold immeasurable value.

Making space for new types of records and new modes of records creation in the archival field does not mean discounting the important role of institutional archives. Rather, it means recognizing that they are just one kind of archive that tends to represent a certain kind of narrative or set of narratives, and that they alone cannot tell the story. It means striving towards archives that are more representative of the ways we communicate and the content of these communications, and that includes mobile devices and the records they are used to create.

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[6] F. Gerald Ham, "The Archival Edge," *The American Archivist* 38:1 (1975): 8.

Grounded in the postmodern paradigm of archiving, this thesis is an attempt to address the impact of mobile devices and connective networks on records, archives, and people, and a study of the many and varied ways in which these two areas intersect. I situate myself at their nexus and trace out some of the many different pathways that extend out of it. It is also an attempt to establish a comprehensive picture of this intersection and its impacts. As such, the scope of this study is necessarily broad; rather than focusing on one aspect, I am casting a very wide net. By doing so, I hope to address the dearth of literature in the archival field of the impacts on archives of internet-connected mobile computing and outline the opportunities and challenges they present.

Although research has been done from a variety of disciplines on mobile computing and mobile technologies, not much has been written about the topic from an archival perspective. The applicable archival literature has tended to focus on the creation, processing, preservation, and use of records in a digital environment, both of born-digital and digitized records. The literature examining archives' use of "Web 2.0" technologies and social networking services is substantial, and while mobile computing plays an important role in the application of these technologies, there has been very little critical writing *specifically* on the intersection of mobile technologies and archives.[7]

[7] See, for example: Alexandra Chassanoff, "Historians and the Use of Primary Source Materials in the Digital Age," *The American Archivist* 76:2 (Fall/Winter 2013): 458–480; Rachel Howard, Heather Fox, and Caroline Daniels, "The Born-Digital Deluge: Documenting Twenty-First Century Events," *Archival Issues* 33:2 (2011): 100–110; Joshua Sternfeld, "Archival Theory and Digital Historiography: Selection, Search, and Metadata as Archival Processes for Assessing Historical Contextualization," *The American Archivist* 74:2 (2011): 544–575; Wendy Duff, Catherine A. Johnson and Joan M. Cherry, "Reaching Out, Reaching In: A Preliminary Investigation into Archives' Use of Social Media in Canada," *Archivaria* 75 (Spring 2013): 77–96; Kate Theimer, *Web 2.0 Tools and Strategies for Archives and Local History Collections,* (New York: Neal-Schuman, 2010).

Due to this general lack of literature in the archival field on this topic, this work draws from a wide range of sources, including archival theories on postmodernism, appraisal, authenticity, personal records, and digital archives; history of computing, cultural history, digital historiography, and digital and information culture. This thesis also draws from popular culture (especially in the discussion on apps and other mobile-assisted technologies), as well as from writings on digital culture that fall outside of academia, which often provide the most up-to-date information on digital trends and developments.

One prominent work from the archival discipline relating to mobile records is Michelle Caswell's 2009 article on the challenges and opportunities of integrating cellphone-generated records into archival collections.[8] Caswell interviews two archivists who have created non-traditional archives that solicit cellphone generated records in order to lay out some of the practical and conceptual issues related to the archiving of these records.

In the information studies field, Amelia Acker has written on mobile information and communication technologies (ICT) and how it complicates the tasks of archiving and recordkeeping. I refer to the works of both Caswell and Acker throughout my study, while drawing out the topic in further detail and elaborating on previously untouched aspects of the intersections of mobile computing and archivy.

The University of Manitoba's Jordan Bass has made an excellent case for the archiving of oft-neglected personal records existing in the digital form, mapping out some of the conceptual and technical complexities involved therein and proposing some

[8] Michelle Caswell, "Instant Documentation: Cell-phone Generated Records in the Archives," *The American Archivist* 72:1 (2009): 133–145.

ways forward, although his work refers mainly to records created and accessed via stationary computers.[9]

This work extends the paths taken by the abovementioned literature. Employing a mixed-methods approach comprised of theoretical analysis, historiographical analysis, qualitative analysis, and content analysis, this research project traces out and examines some of the many ways in which networked mobile devices, born-mobile records, archival practice, and archival repositories intersect, and the impacts of these intersections on records creators, archivists, and end users of archives. In doing so, it hopes to address the void in the literature and generate a discussion within the archival field that is long overdue.

Grounded in the postmodern archival paradigm, the first chapter situates mobile devices as an increasingly common and important generator of archival content and examines what makes born-mobile, born-networked records different from other born-digital records. These differences are identified to shed light on the challenges that have led to the tendency of archives to ignore both mobile devices as a unique mode of creation and the records they produce as records of enduring value, and to help identify solutions to these oversights. Chapter One begins by defining mobile devices and born-mobile, born-networked records and situating them in the larger digital environment and ubiquitous computing context. The second portion of Chapter One suggests possible reasons for why born-mobile records tend to be neglected by archivists and consequently underrepresented in archival collections. I suggest three main reasons for why this is the case. First, the concept of *mobility* is complex when applied to records, making even the

[9] Jordan Bass, "Getting Personal."

discussion around archiving these records difficult. Second, archiving born-mobile records poses immediate and tangible technical difficulties. Finally, even as the archival field moves slowly towards enacting a postmodern paradigm, many archives continue to reflect a positivist approach that values the evidential and transactional value of records over less tangible cultural or social values, and sees born-mobile records as ephemeral, intangible, or unarchival and their authenticity as questionable. I conclude by suggesting possible conceptual and practical steps that can be taken to adjust for the underrepresentation of born-mobile records in archives. I argue that by doing so, we take one step closer to realizing more inclusive, diverse, deinstitutionalized postmodern archives.

The personal, non-institutional outputs of mobile and networked technologies, i.e., the records of individuals as they engage in cultural and social consumption and production, are a vastly underappreciated, undervalued, and overlooked source of cultural material that can be of relevance to archives and to their end users. In Chapter Two, I hope to clarify the kinds of non-institutional records that are being created by examining the functions that bear these records. To do this, I present a heuristic that divides these activities into three main functions: personal or everyday organizational functions (e.g., note-taking, time management, banking); social and entertainment/leisure functions (e.g., social media, social communication, gaming, online dating, personal photography or videography); and political or citizenship functions (e.g., event documentation, political organization or participation, crisis mapping). I also make a case for ephemeral records, noting that these records, which have traditionally been seen as trivial, less stable, less reliable, or otherwise not substantial enough to hold enduring historical value, may in fact

hold great information about our personal recordkeeping practices, interactions, and culture that may be instructive to future generations of users. Chapter Two also examines the very important cultural work done by born-mobile records; especially those arising out of social media, and their role in culture building through the recursivity of knowledge and data. Finally, Chapter Two lays out the very critical role of mobile devices and their supportive technologies as political tools used for activism, resistance, and increased representation of marginalized voices, and posits that the records borne out of these activities are a primary site for enacting citizenship. It also grapples with the concept of authenticity as it applies to born-mobile records, outlining the complex ways in which born-mobile records upend this traditional archival notion.

Chapter Three examines the impact of the widespread use of mobile devices on the public programming side of archives. Users of archives are increasingly relying on these devices to search for, discover, and access archival records, as well as to interact with archival repositories via their web content. Mobility presents some unique challenges and opportunities in the area of archival public programming that require closer examination. This chapter is laid out into four main parts. The first section examines mobile device usership and across the three phases of archival resource discovery: search, discovery, and access. This area of research has received practically no attention from the archival community; as such, this section draws extensively from broader archival literature on public programming, including research on use, usability, and outreach. Next, I look at how the power of networked mobile devices can be harnessed for the application of so-called “Web 2.0” technologies to enhance creator or end-user engagement with records and to enable more participatory archives. I also

briefly investigate the issues related to the use of mobile devices in the reading room. Finally, the last section of this chapter examines the enormous potential for networked mobile devices and their supportive technologies to enhance public engagement with archives and records. I discuss new, immersive technologies such as augmented reality and context-aware apps and highlight their potential in archival outreach to attract and retain the attention of existing and new demographics of users.

I conclude the thesis by summarizing its main findings and arguments, and suggesting avenues for continued research on the topic.

Chapter One: Mobile Devices and the Call for Increased Representation in Archives

In her 2009 article on cellphone-generated records, Michelle Caswell noted that she had trouble finding archives or archivists making a concerted effort to solicit cellphone-generated records and to integrate them into their collections.[1] Almost a decade since Caswell presented her research, more people own mobile phones than ever before, yet it is no easier to locate examples of repositories archiving specifically mobile-device-generated records. Although there are archives whose collections include born-mobile, "born-networked" records,[2] the general lack of such a distinction suggests that the archival field is not actively differentiating this from other types of born-digital records, and that mode of creation is not a key way of valuing born-digital records. This lack of a distinction of born-mobile from other born-digital records does a disservice to the born-mobile records that *are* archived by removing a vital detail of the context of their creation, and, more alarmingly, may be perpetuating the archival field's tendency to undervalue, neglect, or ignore born-mobile records as a legitimate archival record type.

In the postmodern archival paradigm, archivists are called not only to decentralize and democratize the archive, but to situate records within a framework that makes room for the processes and structures underlying their creation, which are grounded in

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[1] Michelle Caswell, "Instant Documentation: Cell-phone Generated Records in the Archives," *The American Archivist* 72:1 (2009): 136.
[2] Amelia Acker, "Radical Appraisal Practices and the Mobile Forensic Imaginary," *Archive Journal* 5(1), (2015). Accessed online at http://www.archivejournal.net/issue/5/archives-remixed/radical-appraisal-practices-and-the-mobile-forensic-imaginary/, June 13, 2017.

individual and socio-cultural expectations and needs. Recognizing mobile devices as a unique mode of record creation, and situating them within their larger socio-cultural context, opens up the possibility for a more holistic understanding of the archival records they help to generate and may be instructive to archivists seeking ways to approach archiving these complex records.

Mobility and the Digital Computing Environment

The main distinguishing feature of born-mobile records is that they are created using mobile devices. I begin this section by unpacking the term "mobile" as it applies to not only devices but to records as well, and by situating mobile devices within the context of the larger digital and ubiquitous computing environment, before delving further into the intricacies and challenges of archiving born-mobile records. Although the types of records and record formats mobile devices generate are often the same as those created via other modes, the ubiquity of mobile devices, the systems and structures that support them (i.e., the physical devices themselves and various mobile networked infrastructures and technologies), the data and metadata they generate, and their ability to generate files and document events with immediacy complicate the work of archiving of the records they are used to create.

Before exploring the impact that mobile computing devices have had on records creation and archiving, we must first understand how they fit within the larger history of computing and within contemporary digital culture. The history of computing has tended to focus on the machine and to ignore the negotiations that happen as technical developments occur. Yet, computers (and mobile computing devices) have no single

narrative and no agency on their own, and their history is not neutral, self-fulfilling, linear, or obvious. As Michael Mahoney states, computers and computing have *histories* that arise out of and are inextricably linked to the histories of the individuals and groups who developed and nurtured them.[3] Developments in computing, programming, and software are all responses to the needs of people motivated by the desire to realize their agendas and aspirations. And, crucially, Mahoney, quoting Rob Kling and Walt Scacchi, reminds us that the "history of commitments constrains choices," i.e., that the histories of technological developments in computing are as much a result of choices as they are of active and passive denials.[4] Historian of computing Nathan Ensmenger further illustrates the recent trend in computing history to situate technological developments in the proper social contexts:

> One of the most significant and lasting insights of recent scholarship in the history of technology has been the realization that technological change is as much driven by social processes as by inherent technological imperatives. In other words, there is never a single, ideal type toward which any given technology gradually evolves. Specific technologies are developed to solve specific problems, for specific users, in specific times and places. How certain problems get defined as being most in need of a solution, which users are considered most important to design for, what other technological systems need to be provided or accounted for, and who has the power to set certain technical and economic priorities are fundamentally social considerations that deeply influence the technological development process.[5]

As Mark Frauenfelder writes, then, "the story of computers... is [thus] the story of our

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[3] Michael S. Mahoney, "The Histories of Computing(s)," *Interdisciplinary Science Reviews* 30:2 (2005): 119–125.
[4] Ibid., 121.
[5] Nathan Ensmenger, "Power to the People: A Social History of Computing," *IEEE Annals of the History of Computing*, 26 (2004): 96.

relationship with computers: how we think of them, use them and learn to live with them in the world we've co-created with them."[6]

Thomas Misa suggests that computing history has progressed through three thematic phases. The first, the machine-centred phase, focused on the technical developments in the hardware and software of machines such as the Enigma, ENIAC, or Whirlwind, but largely ignored the people and motives behind them. As computing history began to gain recognition as a valid area of study, the focus shifted to the role of computers in the information age, no longer framed as mere calculating machines but as tools for networking, capable of shaping society through the information they process. The third phase addressed the histories of the government and corporate institutions responsible for computing developments. Misa proposed in 2007 that historians of computing once again shift their focus, broadening their sights to help make sense of the "interaction of computing—including hardware, software, and institutional dimensions—with large-scale transformations in economies, cultures, and societies."[7]

My study of the impacts of mobile computing on records creation, archiving, and access follows in the vein of this historiographical shift; mobile devices and the records they help to create cannot be extricated from the macroenvironment outside of them. They are both reflective and deterministic of larger social and cultural trends. As Ensmenger suggests, situating technological trends in their larger contexts has allowed for “more rigorous, convincing, relevant explanations of how the computer shapes, and is

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[6] Mark Frauenfelder, *The Computer: An Illustrated History From its Origins to the Present* (London: Carlton, 2013), Introduction.
[7] Thomas J. Misa, "Understanding 'How Computing has Changed the World'," *IEEE Annals of the History of Computing* 29: 4 (2007): 52–53.

shaped by, modern society."[8] Understanding mobile devices and the records they help to produce by examining the social and technical contexts of their creation also reflects the postmodern paradigm, which underpins this thesis.

Mobile devices in use today fit within the larger context of ubiquitous computing, which sees the processing power of computers being extended and woven into almost all aspects of everyday life. The world in which we live, creating and accessing records on the go, outputting and transmitting data effortlessly and often unwittingly, is the world of ubiquitous computing first articulated by Mark Weiser in 1988. At a time when mobile technologies such as the portable cellular phone were just beginning to enter the commercial market on a wider scale, largely still limited due to their size and cost, and when screens were using cathode-ray tube (CRT) technology, Weiser imagined a world where computers of all sizes would surround us, from smaller "tabs" (small enough to be held in the hand), to "pads" (paper- or book-sized), to "boards" (large, wall-sized displays).[9] He foresaw us heading towards a digital age where computers would be present everywhere, built into every part of our environment, across various devices and formats, "so imbedded, so fitting, so natural, that we use [them] without even thinking about it."[10] Weiser theorized that ubiquitous computing would be the third wave of computing. The first, which he called the mainframe wave, saw one computer being used by many people. The second wave, the PC wave, saw an explosion in personal computing, with one user to one computer. Ubiquitous computing would be the third, in

[8] Ensmenger, 96.
[9] Mark Weiser, "The Computer for the 21st Century," *Scientific American*, September 1991, 98.
[10] Mark Weiser, "Ubiquitous Computing," http://www.ubiq.com/hypertext/ weiser/UbiHome.html, accessed June 7, 2017.

which one person would be surrounded by, and connected to, multiple computers that are present on all scales and ingrained "in the woodwork everywhere."[11]

The technologies necessary to realize Weiser's predictions are beginning to see use in a variety of manners and applications. The trend towards ubiquitous computing has led to the integration of computing technologies past traditional, desktop-situated use towards pervasive use that crosses different platforms and physical and virtual networks. The information and communication technologies (ICTs) and infrastructure necessary to incorporate connectivity into our everyday environment are increasingly advanced and fine-tuned, and include devices, sensors, cloud-based infrastructure, and data mining and analysis tools. Objects from smartphones to home appliances generate digital data that can be collected, analyzed, and fed back into the environment, further shaping it, a series of steps that is referred to as the "Internet of Things" (IoT).[12] Connected devices generate extremely large datasets that cannot be managed with traditional database technologies, but which have economic value and so are harvested, stored, and analyzed on a large scale, referred to as "big data."[13] This is part of the macro-environment in which mobile network-connected mobile computing devices reside, and to which they contribute. The records they generate both arise out of and help further construct the ubiquitous digital computing environment; their work in this socio-cultural construction is discussed in more detail in Chapter Two.

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[11] Ibid.
[12] Kevin Ashton, "That 'Internet of Things' Thing," *RFID Journal,* June 22, 2009, http://www.rfidjournal.com/articles/view?4986, accessed October 18, 2017.
[13] Steve Lohr, "The Origins of Big Data: An Etymological Detective Story," *The New York Times,* February 1, 2013, published online at https://bits.blogs.nytimes.com/2013/02/01/the-origins-of-big-data-an-etymological-detective-story/ accessed October 17, 2017.

Mobility as it Applies to Records

The Canadian Wireless Technology Association (CWTA) reports that there are 30,437,561 cellular phone subscriptions in Canada in 2017, a number that continues to rise.[14] In 2016, 73% of Canadians owned a smartphone, an increase of 36% since 2011.[15] As of April 2017, comScore reports that more Canadians access the internet via their mobile devices than via desktop computers (62% versus 38%, respectively).[16] The trend towards increasing mobile device usage and shift away from desktop computing to streamlined applications and platforms was identified by Chris Anderson and Michael Wolff in their ground-breaking 2010 piece aptly titled "The Web is Dead."[17] Anderson and Wolff suggested that that in moving "from your desktop to your pocket," the internet had entered a mature stage in its evolution:

> ...one of the most important shifts in the digital world has been the move from the wide-open Web to semiclosed platforms that use the Internet for transport but not the browser for display. It's driven primarily by the rise of the iPhone model of mobile computing... it's the world that consumers are increasingly choosing, not because they're rejecting the idea of the Web but because these dedicated platforms often just work better or fit better into their lives (the screen comes to them, they don't have to go to the screen).[18]

This idea is echoed by Marcus Wohlsen, who writes:

> As app-happy mobile devices become the primary way we compute, the good old browser becomes irrelevant. The hyperlinked, free-flowing, egalitarian, and ubiquitous world wide web will fade away. Instead, digital existence will mostly transpire within the more self-contained domains of individual apps, which offer

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[14] The Canadian Wireless Technology Association (CWTA). https://www.cwta.ca/facts-figures/, accessed October 18, 2017.
[15] comScore, "Mobile's Hierarchy of Needs: How Mobile Evolved as the Primary Tool for the Digital Omnivore," comScore Report, (2017), 12.
[16] comScore, 4.
[17] Chris Anderson and Michael Wolff, "The Web is Dead. Long Live the Internet," *Wired Magazine,* August 17, 2010. http://www.wired.com/2010/08/ff_webrip/, accessed January 2015.
[18] Ibid.

> their creators the flexibility and power of building right into the mobile operating systems.[19]

The convenience and compactness of networked mobile devices such as smartphones and tablets have made them a central node where work, play, and everyday life intersect. A recent report states that mobile devices fulfill "a primal need," and suggests that the functions mobile devices are now capable of fulfilling fall in line with Maslow's hierarchy of needs, from physiological needs to social needs.[20] Mobile devices have become so instrumental to daily life, so important to people, that more than half (55%) of those surveyed stated that they would prefer to forgo dining out for a year rather than give up their mobile devices, while one third would rather give up sex for a year than lose access to their mobile phone.[21] From a social perspective, the portability, networking capability, and ubiquity of mobile devices provide another mode by which to build and maintain relationships; the immediacy they offer allow people to make instantaneous, real-time connections and offer another forum via which to take part in communities and live out life. Access to social media applications plays an instrumental role in the community building that takes place through mobile devices, adding to the "array of ways in which people connect with each other."[22] As Anatoliy Gruzd et al. suggest, the once common notion that relationships or interactions that take place online are somehow less valid than those formed "in real life" is no longer pervasive; now, "relationships

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[19] Marcus Wohlsen, "The PC's Death Might Also be the Web's Demise," *Wired Magazine,* January 1, 2014, https://www.wired.com/2014/01/death-pc-also-mean-end-web/, accessed May 21, 2017.
[20] comScore, 12.
[21] Ibid., 5.
[22] Anatoliy Gruzd, Jenna Jacobson, Barry Wellman, and Philip Mai, "Understanding Communities in an Age of Social Media: The Good, the Bad, and the Complicated," *Information, Communication & Society* 19:9 (2016): 1191.

often combine interactions in person, on the internet (from email to Facebook), and on mobile phones."[23] The work and play we conduct via mobile devices cannot be neatly separated from the work and play we engage in offline. Indeed, because mobile devices can be seen as spaces that allow for the extension of our offline lives, the functions that give rise to born-mobile records are as numerous and diverse as the functions of our offline lives. Online life *is* real life, and mobile devices are not just an extension, but rather a central space in which we live out our lives. They constitute part of what philosopher and information scholar Luciano Floridi terms "technologies of the self," in that they offer a primary mode via which to shape, define, and re-define our understandings of ourselves and the world and information systems around us.[24] He refers to this work, made possible through digital ICTs, as a "reontologizing…of the infosphere," or as a "very radical form of reengineering, one that not only designs, constructs, or structures a system anew, but that fundamentally transforms its intrinsic nature."[25]

Given the immense constructive power of mobile devices, their pervasiveness, and their use in fulfilling a wide variety of functions, from mundane everyday tasks such as banking or note-taking, to social interaction or communication, to business and work functions, to political activism, it follows that they are increasingly serving as a central mode for records creation, a shift which we would expect to be reflected in archival holdings. Amelia Acker writes that "while it may be hard to imagine an archive of records created with mobile phones, more and more we find that records of all kinds and

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[23] Gruzd et al., 1188.
[24] Luciano Floridi, "Technologies of the Self," *Philosophy and Technology* 25 (2012): 271–273.
[25] Luciano Floridi, "A Look into the Future Impact of ICT on our Lives," *The Information Society* 23, (2007): 59–60.

in every area of society are being created and transmitted with mobile devices in networked infrastructures, and then are stored and distributed across a variety of media and emerging platforms."[26] As with any records, only a fraction of the records created via mobile devices may have enduring archival value, but given the archival field's general lack of distinguishing mode as a way of valuing records, and the lack of soliciting and acquiring born-mobile records in archival repositories, it is likely that even those that do have enduring value are being neglected.

Archiving in the digital era has been the subject of much (continuing) discourse in the field for decades. Archives have largely accepted and even embraced the challenges of archiving records in the digital form, making space conceptually and physically for e-mails and digital photographs in their collections and finding aids alongside analogue records (and in some cases, as the basis of a collection or whole archive).[27] But as Acker points out, the discussion around networked infrastructures is limited, and "archival scholars have not engaged with the infrastructure, platform functionalities, device structure, or wireless transmission of digital records—specifically, the macro-environment outside of individual recordkeeping contexts that extends beyond a static storage site."[28] While some of the discourse around born-digital records can be extended and applied to born-mobile records, the unique nature of the latter demands a more nuanced archival interrogation to help determine how the *mobility* of the devices and the

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[26] Acker, "Radical Appraisal."
[27] See, for example, the Hurricane Digital Memory Bank, developed by the Roy Rosenzweig Center for History and New Media at George Mason University, which "uses electronic media to collect, preserve, and present the stories and digital record of Hurricanes Katrina and Rita… via first-hand accounts, on-scene images, blog postings, and podcasts," available at www.hurricanearchive.org, accessed May 21, 2017.
[28] Acker, "Radical Appraisal."

records themselves affect their provenance so that we can better understand and respond to their archival needs.

Mobility, while being a simple enough concept when applied to devices, is complex and fluid when applied to records. The term "mobile device" is commonly used to refer to a computer or "smart" technology that has two main features: portability and networking capability. I am referring not only to the physical materials of the devices themselves, but to the networked infrastructures, technical systems and structures, and communication technologies that help support them, such as the internet, operating systems, codes, sensors, processors, user interfaces, protocols, software, and middleware. A mobile computing device is scaled down enough to be easily portable (e.g., held in the hand, worn on the body, or easily connected and disconnected from other tools we use) and able to provide computing functions of various kinds "on the go." Its ability to connect to a network via infrastructures such as a mobile data or WiFi internet connection, a Bluetooth connection, a cellular connection, or near-field communication, allow it to communicate with other devices for maximum functionality. It can be outfitted with additional features such as global positioning systems (GPS), gyroscopes or accelerometers, biometric sensors, and scanning and reading capabilities. Smartphones, tablets, drones, wearable computers such as smartwatches or smartglasses, and wearable cameras such as GoPros, are all examples of mobile devices that are widely used, and to which this discussion applies.

The concept of mobile *devices* is straightforward enough: mobility or portability is implied in their name. This link is less obvious, however, for the records they are used to create. The difficulties of conceptualizing mobility as applied to records may, at least

partially, explain why archivists have failed to make the distinction between born-mobile and analogue or other types of electronic records. To begin to make this distinction, and show how it may be useful, we can situate born-mobile records as a subset of an established archival record type, the born-digital record. In many ways, born-mobile records are no different from digital records created via stationary computers or otherwise non-networked digital devices. Like other modes of digital production, mobile computing devices generate and store a range of specific and sometimes proprietary formats, including metadata, program- or app-specific file formats, and temporary and cache files. The file formats mobile devices generate are often the same as those created via other digital modes, including .jpg and .png for still images; .pdf, .txt, and .xlsx for textual files; .mp4 and .gif for moving images; and .mp3, .amr, .aac and .m4a for audio recordings. Even those archivists who do work extensively with electronic records may be used to thinking about them based on their formats, rather than on the mode of creation, and respond to the archival needs of such records accordingly. For example, in outlining standards for preservation, the Library of Congress outlines six broad categories into which they class all creative output; these categories are defined by record type (e.g., textual, still image, audio, etc.); the digital records that fall into each category are further delineated by file format. Mode of creation does not overtly figure into this schema, except insofar as it can be implied based on the format.[29]

Because the file formats created via mobile devices are largely the same as for born-digital records outputted via traditional computing, software currently employed to

[29] Library of Congress, "Library of Congress Recommended Formats Statement 2017–2018," http://www.loc.gov/preservation/resources/rfs/TOC.html, accessed October 9, 2017.

archive digital materials, such as *Archivematica*, presents one option for the preservation and access to mobile-generated archival content (as long as the records are in standard file formats recognized by the software). For mobile-generated records, this task may be complicated by records that are created and stored in proprietary apps or within mobile device software.

Crucially from an archival standpoint, the record types identified above are increasingly being created via mobile devices and the systems and infrastructures that support their functionality. Textual documents (including word-processing files, spreadsheets, letters, short notes, emails, and mobile-specific records such as text messages and mobile messaging logs), voicemail messages, sketches, photographs, screenshots, video and audio recordings, maps, program- and app-specific content, as well as metadata for all of the above are all examples of record types that are increasingly being created via infrastructure-supported mobile computing devices. They are also used to create records that are born and stored online or in the cloud rather than in the individual device's memory (i.e., on a remote server rather than local device storage), via online connectivity to websites and social networks or via apps that rely on middleware to build a connection between the app, the device, and a network.

Born-mobile records tend to stay in their digital form throughout their lifespan, although like other born-digital records, it is possible to bring them into analogue form (though not without altering their materiality and perhaps their content as a result).[30] Like

[30] For some discussions on how the digital environment has affected readings of materiality, see Ala Rekrut, "Matters of Substance: Materiality and Meaning in Historical Records and Their Digital Images," *Archives & Manuscripts* 42 (2014): 238–247; and Maryanne Dever and Linda Morra, "Literary Archives, Materiality, and the Digital," *Archives & Manuscripts* 42 (2014): 223–226.

other born-digital records, their electronic format, combined with the mobile computer's ability to connect to a network, allows them to be transmitted and shared easily and instantly, from anywhere where there is a network connection available. The ability of mobile devices to connect to other devices (or to other users) means that some mobile-generated records can be altered, updated, and changed in real or nonsynchronous time, often by multiple creators (for example, a group chat in a mobile instant messaging app such as WhatsApp allows for a number of co-creators to connect and add to a conversation in real time; the app then saves the time-stamped conversation and any associated shared media to each contributor's individual device).[31] This feature, however, is also not limited to mobile computers alone; a desktop computer that is connected to the internet allows this same functionality for a shared document in the cloud. The defining feature of born-mobile records, then, is the mobility of the device that created it and the mobility of the record itself.

All born-digital records are mobile in the sense that they can be shared via networks, e.g., an e-mail sent via a WiFi connection from an office computer. For born-mobile records, it is the portability of not only the device itself, but that of the *connectivity* to networked infrastructures, that afford them their unique status and demands more nuanced archival interrogation. Cellphone historian Guy Klemens states that a key distinguishing factor of mobility is that it allows for "continuous contact."[32] Born-mobile records connect to other devices and people across networked spaces that are immediately accessible and reachable on the go, leaving traces in the form of files and

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[31] WhatsApp, "Android: Restoring Your Chat History," https://faq.whatsapp.com/en/android/20887921/?category=5245251, accessed October 10, 2017.
[32] Guy Klemens, *The Cellphone: The History and Technology of the Gadget That Changed the World*, (s.l.: McFarland & Company, 2010), 2.

metadata that document these connections. "These records and their traces are mobile because they can move easily through networked infrastructures by way of their structure and form," Amelia Acker states.[33] A key distinguishing feature of born-mobile records, then, is that their form is a result of the fusion of connectivity or networkedness with physical portability and instant access. Acker refers to them as "born-networked," a term I gratefully embrace throughout this work for its clarity and precision.[34] Their provenance is born at the intersection of portability and connectivity. This fusion means that the records generated with the help of mobile devices can be created and shared *on the go,* instantaneously, in the thick of an event, however significant or insignificant, imbuing the records with immediacy and adding a significant contextual layer to their provenance that demands archival acknowledgment. The positive effects of this immediacy, and their ability to enrich our understanding of a record's provenance to help guide our archival decisions, are explored in greater depth in Chapter Two.

The technical intricacies of preserving born-mobile records make it particularly challenging for archivists to ensure that valuable born-mobile records are not being underrepresented in archives.[35] Although mobility is obviously one of the defining characteristics of born-mobile records, from an archival perspective, it makes it difficult to conceptualize the record, i.e., *what* and *where* the record is. I suggest that the materiality of the born-mobile record is complicated by the fact that it may be scattered across physical and digital locations. Mobility blurs the edges of a born-mobile, born-

[33] Acker, "Radical Appraisal."
[34] Ibid.
[35] For a detailed look at some of some the technical challenges of preserving digital records, see Chris Zaste, "Another Bit Bytes the Dust: The Technological and Human Challenges of Digital Preservation," (MA thesis, University of Manitoba, 2016).

networked record, making it fluid and difficult to define, authenticate, appraise, preserve, and make accessible.

The postmodern archivist knows that a record's creation is changeable, that its provenance is evolving, that its story does not end once the record has been acquired and archived, and that it can have multiple creators and co-creators.[36] In that sense, a record is never truly complete; its final or fullest form is ever around the corner, even once it is in the archives. This is especially true for born-mobile records because the portability of the devices they are created on, and the networked nature of the records themselves, mean that the "fullest form" of a born-mobile record might exist not in one physical or even digital location or as one physical or digital document, but across multiple file formats, platforms, and devices. The file that remains to be appraised and described at the archiving stage for a born-mobile record will likely be missing some of its supportive systems and structures, such as software, metadata, middleware, and the networked digital context or environment that it was born into (that is, if the born-mobile record even makes it to the archive). Archivists seeking to preserve born-mobile records must decide on how to delineate their boundaries, a task that is not straightforward when what would traditionally be conceptualized as the "most complete" version of the record in question exists in the process of being created using a mobile device and shared via a network. This has always been the crux of the issue for postmodern archives—delineating the record, objectifying something that is not stable or objective—something that is always subjective, open to interpretation, to growth, and to evolution.

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[36] Tom Nesmith, "What is an Archival Education?" *Journal of the Society of Archivists* 28:1 (2007): 3.

Connectivity poses not just a conceptual problem but a logistical one, too: not only are archivists challenged to define the edges of a fluid, evolving record so that they can appraise and describe it, they need to acquire the necessary technical supports and structures to view it, preserve it, and make it accessible, which even for a defined record, may be unfeasible for archives already pressed for resources. For digital records accessible via stationary computers, this is complicated enough; for mobile-born records, this is especially the case due to the networked structures a mobile device relies on.

A Case in Point: The Challenges of Archiving Text Messages

Examining more closely an example of a mobile-native communication format that poses unique challenges from an archival perspective may help to illustrate some of the practical and theoretical concerns of archiving born-mobile records or record sets. Text messaging is one such example: a mobile-native medium for record creation and dissemination that is widely used for personal and business communication, having overtaken voice calls as the preferred medium.[37] Saving and exporting text messages from a mobile phone is difficult and unintuitive, and mobile phones do not come equipped with software or automated processes that allow text messages to be easily archived. Instructional resources on how to do so are difficult to find, even via a general Google search, and instructions from qualified professionals such as archivists are scarce.[38] Yet, as Michael Ashenfield writes, "as choppy and terse as cell-phone texting is,

[37] Ofcom, "2017 Communications Market Report: Bitesize," (2017), accessed online at https://www.ofcom.org.uk/research-and-data/multi-sector-research/cmr/cmr-2017/the-communications-market-bitesize, 6, accessed September 4, 2017.
[38] One example the author could find was a 2013 blog by Michael Ashenfield. See Michael Ashenfield, "Personal Digital Archiving: Saving Cell Phone Texts," *Public Libraries Online,* July 25, 2013, http://publiclibrariesonline.org/2013/07/personal-digital-archiving-saving-cell-phone-texts, accessed October 1, 2017.

it still qualifies as correspondence. And since we value and save other text correspondence—such as letters and email—it seems natural that we might want to save text messages too. The problem is that saving text messages off a cell phone is not quite easy or convenient."[39] In business, the public sector, and institutional environments, mobile phones are seeing widespread use and, as Beth Cron (writing as "bcron") points out, archivists are aware of "the reality that employees are using mobile devices to conduct agency business" and that employees are using them regardless of whether or not their agency has a mobile use policy.[40] In Canada, the federal government's "Information Technology Strategic Plan" states that it is "committed to and encourages an open and collaborative work environment where mobile devices are used" and briefly outlines the government's plans to build and launch a mobile app store.[41] Strategies for employees working with digital document formats and mobile-native communication services, including emails, text messages, instant messages, and collaborative chats and documents, are outlined in its "Guideline for Employees of the Government of Canada: Information Management (IM) Basics." The guideline states that all communication documenting "decisions or actions pertaining to GC business are considered information resources of business value which are to be retained and managed accordingly, along with any attachments or metadata that contribute to their structure, context, and

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[39] Ibid.

[40] bcron, "Managing Records in Mobile Environments: Background and Benefits," *Records Express: Official Blog of the Chief Records Officer at the National Archives,* March 13, 2014, http://blogs.archives.gov/records-express/2014/03/13/managing-records-in-mobile-environments-background-and-benefits/; and bcron, "Managing Records in Mobile Environments: Addressing Records Management Implications," *Records Express: Official Blog of the Chief Records Officer at the National Archives,* March 20, 2014, http://blogs.archives.gov/records-express/2014/03/20/managing-records-in-mobile-environments-records-management-implications/, all accessed July 15, 2017.

[41] Government of Canada, "Government of Canada Information Technology Strategic Plan 2016-2020," https://www.canada.ca/en/treasury-board-secretariat/services/information-technology/information-technology-strategy/strategic-plan-2016-2020.html, accessed October 9, 2017.

content."[42] In the United States, in line with the White House's Digital Government Strategy, many agencies are enabling workers to use mobile devices, either provided for them, or their own. There is a trend towards "BYOD" ("bring your own device"), which translates to reduced agency costs and allows workers to work with their preferred mobile device, where and when they want, and to access information outside of the work environment.[43]

In the public service sector, at least, the archival value of born-mobile records is recognized, though the steps for saving, transferring, and preserving these records is outlined only in general terms in both Canadian and American information management strategies. The responsibility for detailing the exact steps for getting records off the device or out of the cloud and into trusted electronic document and records management (EDRM) systems is left with individual departments or organizations. Recently (in July 2017), Canada launched its new Digital Service (CDS), indicating that the government recognizes the need to embrace and deliver digital content in ways that are more technically agile, up to speed with current digital trends, and intuitive to users, including both the public and its own employees. Describing the CDS initiative, President of the Canadian Treasury Board, Scott Brison, has stated that the government "cannot continue to be a Blockbuster service in a Netflix world."[44] According to the CDS report,

> technological advances, coupled with the private sector's responsiveness to client demands have resulted in rising citizen expectations for digital service delivery.

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[42] Government of Canada, "Guideline for Employees of the Government of Canada: Information Management (IM) Basics," https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=16557, accessed October 9, 2017.
[43] Ibid.
[44] The Current, "Government's New Startup Aims to Increase Services for Canadians," *CBC Radio,* December 14, 2017, http://www.cbc.ca/radio/thecurrent/the-current-for-december-14-2017-1.4446791/government-s-new-startup-aims-to-create-better-services-for-canadians-1.4446955, accessed December 14, 2017.

> Financial institutions allow clients to quickly check balances, transfer funds or pay bills through mobile applications. Online retailers offer more selection, delivery on demand, and easy returns. Uber, Airbnb and other organizations active in the "sharing economy" are disrupting and overhauling established industries. In a digital era where citizens expect responsive and seamless service, governments must rise to the challenge. While private sector firms have shifted to a delivery model where "there's an app for that," too often the response from government remains "there's a paper form for that"…. Digital government extends beyond electronic service delivery and self-service. It touches every facet of how governments manage service delivery, and engage citizens and stakeholders – and leverages digital advances to allow citizens to access services anywhere, anytime. In the long run, digital government can help build stronger engagement and trust between citizens and government, and make public institutions more inclusive, effective, accountable and transparent.[45]

The initiative is still in the development stages, and has not outlined in specific terms how it will respond to the specific challenges and opportunities posed by mobile devices, or, from the public service side, whether one of its initiatives will be to streamline the work of archiving mobile-created government data.

Interestingly but perhaps not surprisingly, the latest report from the Information Commissioner likewise has omitted any mention of mobile devices.[46] Presumably, electronic records such as emails, which are critical in requests to information, are increasingly being created, shared, stored, and deleted via mobile devices, but the mode of creation does not figure into the report whatsoever, even if it ends up figuring into complaints or investigations. It would be interesting to see how mobile devices used within the public service are assessed in access to information requests and in complaint investigations.

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[45] Government of Canada, "Beginning the Conversation: A Made-in-Canada Approach to Digital Government," https://digital.canada.ca/beginning-the-conversation/full-report/, accessed December 14, 2017.

[46] Information Commissioner of Canada, "Annual Report 2016–2017," http://www.oic-ci.gc.ca/telechargements-downloads/userfiles/files/eng/reports-publications/annual-reports/OIC_AR2017_ENG_v2.pdf, accessed December 15th, 2017.

In the private sector, the business value and transparency gained through the preservation of born-mobile content has led to the creation of proprietary content harvesting and preservation services. These commercial tools, such as Gwava or Smarsh, are sold to employers seeking to retain their employees' mobile device content to meet regulatory needs or for corporate policy compliance, allowing for the retention of SMS, MMS (Multimedia Messaging Service), and phone call logs via an app that is saved to the user's phone. The apps capture content in real-time and push it to privately owned servers, where it is available to the employer. [47]

Yet, while the preservation of public or private sector records is vital for accountability and transparency, and to meet economic or regulatory needs, not all—perhaps not even most—of the mobile records of enduring or archival value are created in public service or business contexts. For historians interested in tracing cultural, social, and political events or developments, and scholars studying people and their relationships and interactions with others or within larger social systems, personal and non-institutional records hold immeasurable value. And while archival repositories hold analogue, digitized, and even born-digital records that were retained and preserved because their archival value seem apparent and undisputable, so too have historians learned from documents that exist only because no one went out of their way to destroy them. Given that "electronic records rot much faster than paper ones," this outcome is less likely in the digital age, and especially unlikely for born-mobile, born-networked records that are not easily transferrable out of their native medium and format.[48] In the case of text messages

[47] Gwava, "Unified Archiving: Archive Emails, Social Media, and Mobile Device Data," https://www.gwava.com/, accessed June 8, 2017; Smarsh, "Comprehensive Archiving Solutions," http://www.smarsh.com/, accessed June 8, 2017.
[48] David Talbot, "The Fading Memory of State," *Technology Review* 108:7 (July 2005): 44–49.

in the personal communications sphere, without specialized software or (often paid) apps, SMS content is only preserved if the user/creator goes out of their way to preserve it. Records that may be of archival value go unarchived, and in the worst-case but common scenario, are eventually permanently rewritten on a phone's memory to make room for new incoming messages. A number of apps exist in app marketplaces that allow users to download and save their messages in a .txt format, but the onus is on the user to download and use them regularly to preserve their content.[49] Other more convoluted and impractical methods of saving SMS include taking screenshots of text message screens and then saving the resulting image files (and then transferring those to other storage media), emailing text message content to oneself, or requesting copies of one's text message content from the service provider—an option that will likely require a court order due to the privacy laws governing access to phone records.[50]

The challenges for preserving text messages are just one example of how the mobile environment complicates the archival prerogative from both technical and theoretical angles. Archiving mobile-native formats is even more complicated when it comes to born-mobile content stored in cloud-based services, such as social media apps like Twitter or Facebook, or content created via online messaging services such as Facebook Messenger, Google Hangouts, Slack, or Viber, which are widespread and on track to supplant SMS as the preferred mode of instant, mobile-based communication.[51] In addition, the proliferation of apps such as Snapchat and tools such as Instagram or Facebook Stories, which present ephemerality as a main feature, further complicate

[49] Examples of apps available on the app marketplace for SMS and other mobile data archiving include "Chomp," "SMS Backup+," and "SMS Backup&Restore."
[50] Ashenfield, "Personal Digital Archiving."
[51] Ofcom, 12.

traditional ideas of record permanence and stability, and pose the larger question of the role of the archivist in preserving personal born-digital records. As emphasized by Anderson and Wolff, interactions that take place on mobile devices (and the records that ensue) are increasingly made via proprietary, closed or semi-closed platforms. [52] This adds an extra layer of difficulty for archivists, both from a technical and a theoretical archival perspective. From a technical perspective, content generated using an app on a mobile phone, for example, may not be easily exported or displayed outside of its native environment. Preservation will likely involve migration to other formats. Apps that transmit and store content in the cloud rather than on the individual device require login or user authentication to access the content, so that direct intervention from the user/creator is required. Born-mobile, born-digital content that is accessible via the public platforms to which it was shared, such as public Tweets or Facebook posts, must be migrated out of their native format, environment, and context to be preserved. This is problematic. As Amelia Acker and Jed Brubaker have argued, the contextual environment into which such records are born is integral to their existence. They suggest that the preservation of the "contextual integrity of networked data" should be a priority for archivists working with records born within social networking platforms and activities.[53] From a theoretical perspective, this further underscores the role of users in the survival of the records they create on mobile devices and brings to the forefront the increasingly pressing need for the postmodern archivist to be a "purveyor of context"

[52] Anderson and Wolff, "The Web is Dead."
[53] Amelia Acker and Jed R. Brubaker, "Death, Memorialization, and Social Media: A Platform Perspective for Personal Archives," *Archivaria* 77 (Spring 2014): 20.

while they work to balance the user's role with his or her professional duty to preserve the records of not just institutions, but of the marginalized and of everyday actors.[54]

In 2010, the Library of Congress (LoC) announced that it had acquired and would preserve and make accessible the entire Twitter archive.[55] LoC's decision was based on its recognition of Twitter's role in shaping American history and furthered its agenda of acquiring collections with research value.[56] The initiative garnered much public attention and was a clear signal that the LoC, an American institution, recognized the value of social media in shaping and reflecting cultural trends and history. However, although the project did succeed in some aspects (i.e., by 2013, it had collected and archived all public Tweets from 2006 to 2010), it stagnated in others.[57] Most significantly, the Twitter archive at LoC still does not allow research access to the archive, which would open up the Tweet data to be searchable in ways previously only available via proprietary algorithms owned by Twitter itself. It also seems to be struggling with the enormous task of keeping up with archiving new Tweets, which grow exponentially every day, and are now complicated by the addition of embedded links, still images, moving images (.gifs), and videos. Michael Zimmer, a privacy and internet ethics scholar, suggests that the challenges encountered with the LoC Twitter archive project can be divided into two categories: technical challenges (e.g., sorting, storing, retrieving the Tweets), and

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[54] Verne Harris, "Ethics and the Archive: 'An Incessant Movement of Recontextualisation,'" in *Controlling the Past: Documenting Society and Institutions – Essays in Honor of Helen Willa Samuels,* ed. Terry Cook (Chicago: Society of American Archivists, 2011), 345.
[55] Matt Raymond, "How Tweet it Is! Library Acquires Entire Twitter Archive," April 14, 2010, https://blogs.loc.gov/loc/2010/04/how-tweet-it-is-library-acquires-entire-twitter-archive/, accessed December 15, 2017.
[56] Gayle Osterberg, "Update on the Twitter Initiative at the Library of Congress," https://blogs.loc.gov/loc/2013/01/update-on-the-twitter-archive-at-the-library-of-congress/, accessed December 15, 2017.
[57] Ibid.

challenges related to policy (e.g., intellectual control, privacy, user control over the information archived).[58] The Twitter archive project, while groundbreaking and ambitious in its scope, underscores the complexities associated with archiving huge amounts of contextually linked data. As Tweets are largely, but not expressly, generated via mobile phones, the LoC Twitter initiative may offer valuable lessons for archives seeking to preserve born-mobile records and social media records in particular. Chief among these may be the need to start small and to define concrete and technically achievable project goals. At the same time, the LoC Twitter archive is a refreshing example of an institutional archive working to preserve the stories that may otherwise remain unarchived—the Tweets of an everyday citizen end up in the same catalogue as those of Barack Obama.

What can be done to facilitate the survival of born-mobile records of enduring value, and how can archivists work to locate and archive these records in an age when they are not only produced in vast quantities, but tend to stay within the devices and networks of those who created them? Some archivists, including those engaged in the International Research on Permanent Authentic Records in Electronic Systems (InterPARES) Trust, have been working to define and delineate electronic records within a practical, methodical, analytical framework.[59] Using a contemporary diplomatics approach, the Trust's authenticity task force is deconstructing electronic records down to

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[58] Michael Zimmer, "The Twitter Archive at the Library of Congress: Challenges for Information Practice and Information Policy," *First Monday* 20:7 (July 2015), accessed online at http://ojphi.org/ojs/index.php/fm/article/view/5619/4653, accessed December 20, 2017.
[59] InterPARES Trust, "Research Domains," https://interparestrust.org/trust/about_research/domains, accessed October 17, 2017; Heather MacNeil, "Providing Grounds for Trust: Developing Conceptual Requirements for the Long-Term Preservation of Authentic Electronic Records," *Archivaria* 50 (Fall 2000): 52–78.

their elements in an attempt to define an appraisal criteria to make it possible to authenticate them and determine methods for their preservation. By extension, the diplomatics rubric should be applicable to born-mobile digital records, but while it may be instructive from an immediately practical standpoint, as Terry Cook has pointed out, it is problematic from a larger theoretical standpoint.[60] Not only does it assume that records can be broken down to a science that archivists can objectively analyze—"archives as logical positivism," according to Cook—it rests on the presumption that the elements it attempts to define are stable, unchangeable, and hold one fixed, full, objective form.[61] In addition, it upholds the evidential and transactional value of records as deterministic of their archival value, and leaves little conceptual room for the social and cultural value of less tangible, ephemeral records. How do we breach this abyss to help bring about a more inclusive, representative, and diverse archive that tells the stories of everyday or marginalized actors, when the strategies that exist for archiving mobile records are centered to cater to institutions or individuals acting from positions of power or in official capacities?

Beyond Technical Issues: Making Intellectual Space for Born-Mobile Records

As Michelle Caswell argues, although "cell-phone-generated voicemail messages, text messages, still images, and video footage are often viewed as ephemeral, tailored to meet the needs of a fast-paced, 'disposable society,' cell phones can also generate records of enduring value."[62] A crucial step to archiving born-mobile records is an intellectual one:

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[60] Terry Cook, "Archival Science and Postmodernism."
[61] Ibid., 14.
[62] Caswell, 135.

to recognize that even ephemeral, instant records made in immediate response to an event or to document a thought or action can have archival value. The fear of intangibility and the technical challenges posed by born-mobile records are valid, but rather than be ignored, they must be acknowledged and faced head-on to ensure that archivists are upholding their professional responsibility. The postmodern archivist accepts that in the onslaught of records being made every minute via a categorically slippery medium, among the transitory or low-value records, there too exist records that speak to the experiences of people, that document events from perspectives that may not be represented in official versions of events, and that may remain undocumented and lost to history if we do not make conceptual and practical room for them in our repositories.

The postmodern approach offers the best chance of outlining a path forward to a more inclusive, representative, deinstitutionalized archive that is also more representative of the ways we communicate and the content of these communications. Records created via mobile devices are a big part of modern-day communication and should be represented accordingly in our holdings, even if this requires intellectual and practical shifts in our approaches. This shift should be reflected across all stages of our work, from acquisition, to appraisal, to preservation, to public programming or access. In the acquisition and appraisal stages, for instance, this may mean expanding our ideas about what counts as an authentic, archivally valuable record; as Michelle Caswell has suggested, "archival notions of authenticity may have to change to meet the current realities of record creation in the cell-phone era."[63] Doing so will open up the conceptual room for born-mobile records that may otherwise have been neglected; the conceptual

[63] Caswell, 141.

room may then lead to increased physical acquisition and a concrete presence of born-mobile records in archives. In cases where resources are already scarce, this may involve reallocating or shifting existing resources to allow for a more balanced representation of born-mobile records in the holdings, though it may concurrently lead to a decrease in records created via traditional modes.

Convincing people of the importance and value of their mobile device records is another crucial step. Archival collections or repositories that solicit records from the public, especially community-based and event-based archives, such as the Hurricane Digital Memory Bank, the People's Archive of Police Violence in Cleveland, or the Women's March on Washington Archive, could not exist as they do without born-mobile records, such as videos or photographs taken in the midst of critical events or records documenting the organization of responses to natural or political events.[64] Yet, none of these archives makes this distinction. Making potential contributors aware that their born-mobile content—their mobile phone photos and text messages; their GoPro footage—is valuable, will increase the breadth and depth of holdings while increasing the variety of voices and stories represented in the archive. Something as simple as adding a checkbox or an option to already existing drop-down menus on the "Contribute Materials" section of such websites would not only raise awareness, but could also be instructive in the processing and description stage of archiving. Letting end-users know, for example, that a record or record set was created via a mobile phone in its description or finding aid will

[64] Hurricane Digital Memory Bank; A People's Archive of Police Violence in Cleveland, "About," http://www.archivingpoliceviolence.org/purpose, accessed June 12, 2017; Danielle Russell and Katrina Vandeven, "Project Spotlight: Women's March on Washington Archives Project | Women Archivists Section," *The Society of American Archivists' Women Archivists Section*, January 10, 2017, https://womenarchivistsroundtable.wordpress.com/2017/01/10/project-spotlight-womens-march-on-washington-archives-project/, accessed January 10, 2017.

provide additional context. Making records searchable by mode of creation could be useful for those researching responses to events, or those seeking specific types of records. Engaging records creators and end-users via Web 2.0 "folksonomies," i.e., opening up regulated spaces where the public can contribute to description or further contextualizing of contributed records, is an option that is steadily gaining ground in many archives, as discussed in Chapter Three.

In terms of processing and preservation, archives should follow the approach they have embraced for archiving other born-digital records: instead of shying away, look for solutions that provide an acceptable balance of technically feasible and affordable with format-stable and accessible, whether this means migrating records to other formats, or emulating mobile-native environments. The latter may require additional contextualization by the archivist in the form of annotations or a detailed custodial history so that their work in the delineation of the record's edges—the de-facto co-creation of the record—is made evident and transparent.

Perhaps the most critical practical step we can take is to embrace the idea of an archive where shared authority lays at the heart of the work we do. Bill Adair et al. propose that archivists loosen their grip on the concept of authority and make room for the user in its definitions and applications. They argue that while it may require a "letting go," doing so may present a way to "balance our professional duties to develop and care for collections for future use and our responsibility to serve the present needs of our publics, including people who will never set foot in archives."[65]

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[65] Rebecka Sheffield, review of *Letting Go? Sharing Historical Authority in a User-Generated World* by Bill Adair et al., in *Archivaria* 75 (Spring 2013): 235; Bill Adair et al., *Letting Go? Sharing Historical Authority in a User-Generated World*, (Philadelphia: Pew Center for Arts & Heritage, 2011).

Kate Theimer and Elizabeth Yakel have written extensively on the ways that digital technologies are altering the relationship between archives and their users and changing the ways in which records are created and archived. [66] Theimer argues that archives need to educate people about how to preserve their digital records so that they can better understand their role in documenting society. Acker and Brubaker suggest that emerging strategies for public education on self-archiving are an important aspect of changing archival approaches to personal archives; they describe this education as offering "pragmatic strategies for individual creators to collect, organize, and curate digital assets that are stored on media in their purview."[67] Acquiring more born-mobile, born-networked records might also require more of the "pre-custodial intervention" work outlined by archivists like Adrian Cunningham and Jordan Bass. This type of strategy involves "the archivist [becoming] actively involved in the recordkeeping processes of individuals to ensure electronic records are 'properly created, managed and documented in the first instance' so archivists may capture the required content data in addition to the contextual and structural elements of the records to support long-term preservation and the provision of access."[68] As Bass argues, "significantly more work with records creators earlier in the record creation process must be done when archiving personal

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[66] Kate Theimer, ed., *A Different Kind of Web: New Connections Between Archives and Our Users (*Chicago: Society of American Archivists, 2011); Kate Theimer,"'Now is What Matters': My First Official Appearance as an 'Agent Provocateur' at the Canadian Archives Summit," *ArchivesNext,* January 24, 2014, http://www.archivesnext.com/?p=3668#more-3668; Elizabeth Yakel, "Balancing Archival Authority with Encouraging Authentic Voices to Engage with Records," in *A Different Kind of Web: New Connections between Archives and Our Users with Web 2.0,* ed. Kate Theimer (Chicago: Society of American Archivists, 2011); Elizabeth Yakel, "Who Represents the Past? Archives, Records, and the Social Web," in *Controlling the Past: Documenting Society and Institutions (Essays in Honor of Helen Willa Samuels,* ed. Terry Cook (Chicago: Society of American Archivists, 2011), 257–279.

[67] Acker and Brubaker, 3.

[68] Bass, "Getting Personal," 33, quoting Adrian Cunningham, "Waiting for the Ghost Train: Strategies for Managing Personal Records Before it is Too Late," *Archival Issues* 24 (1999): 58.

digital records because more proactive measures are required to capture and preserve these materials than was previously the case with paper-based or analog documentary forms."[69] Shared authority and pre-custodial intervention for born-mobile records may be destabilizing and scary for archivists, but, as Theimer, Yakel, Acker, Brubaker, Cunningham, and Bass have suggested, it may offer the best chance to enrich archival holdings to better reflect born-mobile records, especially arising out of the personal milieu.

Finally, from an end-user, public programming and outreach perspective, a shift towards a more representative archive would entail actively teaching people about the value of their born-mobile and otherwise personal records. Whether it is through prominently displaying born-mobile records as part of exhibits, or through workshops or other public engagement sessions, archives can incorporate this mode of creation into their end-user-centered public programming work to make it more visible and valid and encourage positive lateral effects.

[69] Ibid., iv.

Chapter Two: Born-Networked, Born-Mobile Records

The key to civic engagement for society and scholarship is in the access to, and creation of, its own archive.

—Mary Flanagan and Peter Carini

A central goal of the postmodern archive is to expand its representation to include more of the records and stories of everyday actors to balance out the preponderance of records and stories of those acting from positions of dominance and privilege. Recognizing the role of mobile devices is central to this task, as their ubiquity means that they are also a primary mode of records creation. Furthermore, mobile devices are increasingly central to life in the private sphere, so that the records they help to produce reflect the depth and breadth of personal experiences of everyday actors. This second chapter, then, focuses on how archives can better reflect the personal domains of life that institutional archives tend to ignore. The personal, non-institutional outputs of mobile and networked technologies, i.e., the records of individuals as they engage in cultural and social consumption and production, are vastly underappreciated, undervalued, and overlooked source of cultural material that can be of relevance to archives and their end users. As illustrated in Chapter One, a key distinguishing feature of born-mobile, born-networked records is that their mode exists at the fusion of connectivity or networkedness with physical portability and instant access. Examining what this means from an archival standpoint helps us to better respond to the dearth of personal born-mobile records in archival repositories and offers the best chance of building archives that are inclusive, empathetic, trans-sectional, deinstitutionalized and more representative of not only the

ways we communicate, but of the content of these communications. Continuing in the vein of the postmodern paradigm guiding Chapter One, this chapter then further expounds on the types of records produced by born-mobile devices and highlights their role in socio-cultural construction and in the democratization of history and of the archive.

To better illustrate the types of abovementioned personal records that mobile devices may be used to generate (and by extension, the types of records archives may be missing out on by neglecting born-mobile records as a valid archival source), I present a heuristic that divides them into three main functions: personal or everyday organizational functions (e.g., note-taking, time management, banking); social and entertainment/leisure functions (e.g., social media, social communication, gaming, online dating, personal photography or videography); and political or citizenship functions (e.g., event documentation, political organization or participation, crisis mapping). These three functions often overlap, and the divisions between them can be drawn in other ways, but they are used here as a heuristic tool to encompass the variety of personal functions of networked mobile devices and to help clarify the kinds of records they generate.

To show how the intersection of portability and connectivity plays out in each of these functions, current, "live" examples of how mobile devices help to create records of each type of function are presented. I argue that due to the ubiquity of mobile devices today and their proliferation across the above-identified functions of our daily lives, the born-mobile records that such examples help to produce lie at the very centre of culture-building and thus are critical to the archival documentary mission. Some of the risks and

opportunities associated with born-mobile records arising out of each of these functions are also discussed.

Personal, Organizational Born-Mobile Records: A Case for Ephemerality

The first type of record situated within the proposed heuristic results from everyday organizational tasks, such as note-taking, banking and budgeting, time management, and personal health management. These functions are increasingly undertaken using digital media, via networked personal mobile devices such as smartwatches, tablets, and in particular, mobile phones.[1] Adrian Cunningham, writing in 1994, proposed that the proliferation of personal recordkeeping technologies that was already then permeating daily life was "indicative of the revolution that is taking place behind closed doors of suburbia."[2] This revolution has taken place largely in the private domain, via the small devices now easily carried with us in our pockets every waking moment and accessed many (even hundreds of) times a day. A recent report on mobile devices published by comScore, an analytics company that tracks consumer behaviour internationally, states that "in 2017, mobile devices have an unquestionable role as consumers' primary digital tool," and that "the concept of 'mobile first' is no longer exclusive to technology-focused businesses and consumers, but is the default position for a growing number of internet users, who now spend the majority of their digital time on smartphones and tablets."[3] The

[1] comScore, "Mobile's Hierarchy of Needs: How Mobile Evolved as the Primary Tool for the Digital Omnivore," comScore Report, (2017).
[2] Adrian Cunningham, "The Archival Management of Personal Records in Electronic Form: Some Suggestions," *Archives and Manuscripts* 22, no. 1 (1994): 42.
[3] comScore, 1–2.

report further highlights the extent to which mobile devices have become the de-facto mode for the fulfilment of personal organizational tasks.

Mobile devices—mobile phones in particular—are more pervasive than ever before. A large shift in the resulting records produced has taken place as a result, wherein the documentation that we emit as we go about our everyday organizational tasks are being made, stored, shared, and deleted in digital format, on digital media, and using mobile digital devices as the primary mode of production. In the analogue era, such ephemera, or traces left behind as products of everyday life, was represented by records such as paper notes, diaries, journals, calendars, and transactional records such as banking slips or receipts.

The lateral effects of the shift towards instant, convenient, and continuous connectivity on our macroenvironment are immeasurable, immediate, and all-encompassing. The digital ephemera that arises out of this continuous connectivity are of particular interest from an archival standpoint. The socio-cultural and historical effects of the predominance of mobile devices can and should be represented in archives through the records that are created as by-products of the functions they help to fulfill. Archivists are entrusted with the very subjective and complex task of preserving the documentary heritage of societies; this should, at least theoretically, include personal records that are reflective of how we organize and maintain our lives. Yet, such records have largely fallen outside of the net cast by many archives, and those produced via mobile devices especially so.

This is not surprising given the overarching archival tendency to relegate ephemeral records to a lesser place in the archive. Even in paper-based archives, these

types of records, i.e., those left behind from personal organizational functions, have traditionally been deemed as holding less value and importance than "official" records. They have tended to be seen as trivial, less stable, less reliable, or otherwise not substantial enough to hold enduring historical value. This is in part due to the fact that they often lack many or all of the indicators of what would traditionally be regarded as an authentic and reliable record, such as seals or signatures. As such, they are regarded as failing to meet the conceptual requirements or appraisal criteria for records of enduring value, and are moved to the discard pile—if they make it to the archive in the first place. As Bass outlines, "the strategies developed for electronic archives are directed toward government or large corporate institutions and tend to treat all electronic records as products of functions and transactions, giving little if any consideration to the unique characteristics of electronic materials generated in private environments."[4] Indeed, a widely-reproduced list assembled by Maynard J. Brichford in 1977, which lists various types of archival records and classes them under the headings "usually valuable," "often valuable," "occasionally valuable," "often without value," and "usually without value," is still referred to by archivists today.[5] Ephemeral, everyday organizational personal records are grouped in the last column. In fact, in many cases, ephemeral records are regarded as holding so little value that they are often destroyed without requiring approval by the overseeing archivist or annotation to document their destruction.[6]

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[4] Bass, 29.

[5] Maynard J. Brichford, *Archives & Manuscripts: Appraisal & Accessioning,* Society of American Archivists (Chicago: Society of American Archivists, 1977), 22–23, as cited in Archives Association of British Columbia's *A Manual for Small Archives,* (Vancouver: Archivies Association of British Columbia, 1999), 148.

[6] See for example "RMU Information Sheet 9: What is an Ephemeral Record?" Records Management Unit, University of Tasmania. Tasmania: University of Tasmania, 17 March 2011, pp.1. Under the "Trivial messages and emails" section (p.2), for example, the information sheet states: "If you are unsure whether a message is trivial or not, ask yourself whether it is evidence of a transaction, agreement, policy

From a postmodern perspective, this is troublesome for a few reasons. First and foremost, the notion that ephemeral records are less valuable is outmoded because it fails to recognize the many ways such records could be useful, interesting, or historically valuable to researchers, scholars, and any potential end users interested in life in the private sphere. Secondly, it fails to recognize the differences in how individuals value and preserve their personal information and how archives value and preserve it, an issue discussed in detail by Jordan Bass.[7] The records that occupy Brichford's last column, I and others argue, may hold values that fall outside of the archival field's traditional assumptions of how records are used and by whom. In fact, these assumptions may be holding us back by missing out on potential users and uses of archives that fall outside of the common genealogical, historical, or legal researchers, such as cultural anthropologists, sociologists, or cultural historians. As Nesmith argues, a postmodern opening up of the archive to new recontextualizations also opens up space for new users and uses of archives.[8] Finally, attempting to discern the value of personal ephemeral records by judging their worth based on a rubric designed to meet positivist goals does a disservice to these records because they instantly fail to meet a set of criteria that was designed to appraise completely different types of records, namely those that hold transactional, legalistic, or evidential value rather than cultural value. Destroying records without a trace is in direct conflict with the postcustodial concept of the archive articulated by Terry Cook, Tom Nesmith, and others, where the archivist is posited as an

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change/decision, formal advice or a directive; authorises an action; relates to a matter likely to be reviewed or audited; or contains information your successor would need if you were to leave your job tomorrow. If none of these apply, then the message may be considered trivial and may be destroyed."

[7] Bass, 69.

[8] Nesmith, "Reopening Archives," 260.

active co-creator of records and is encouraged to document appraisal or processing decisions that impact the record.[9]

What kind of value can be gained from these types of records? Why should archivists, who are already overburdened with acquisitions and pressed for personnel, financial resources, technical supports, and space both physical and digital, consider incorporating born-mobile, personal organizational records into their collections? The strongest argument is that for archives striving to be more inclusive and representative, such "minor" records can actually be immensely valuable. For researchers studying how people spend their private time, how they think about their lives, how they organize their schedules and structure their lives, notes or calendars are instructive and informative. The methods we use to undertake these often mundane or ritualistic acts, as well as the documents that arise out of them, all speak to what we value individually and as a part of a wider culture and society, reflecting social mores, rituals, and preoccupations. Such records may be especially instructive for relaying the everyday lives of people commonly left out of dominant narratives and out of archives, including ethnic or cultural minorities, women, gender and sexual minorities, people of lower economic classes, children and youth, the elderly, those living in remote communities, as well as those who identify with various underrepresented or marginalized subcultures.

Contemporary historians interested in the lives of women in medieval times, for example, would be overjoyed at the chance to pore over the notes, calendars, recipes, or other such ephemera created by women of the era. Quite obviously, these records do not

[9] Terry Cook, "The Archive(s) is a Foreign Country: Historians, Archivists, and the Changing Archival Landscape," *The Canadian Historical Review* 90:3, (September 2009): 497–534; Nesmith, "Seeing Archives,"24–41.

exist because literacy and recordkeeping in medieval times was the domain of the powerful—priests, scribes, "people who were of sufficient status to have direct dealings with central government," and "wealthier landowning members of society," while "most ordinary people are less well documented."[10] Future scholars may be missing out on valuable born-mobile, personal records, not because they were not created, but because they were not solicited or archived. Now, literacy and access to personal recordkeeping tools and technologies are widespread, but the documentation left behind by people engaging in daily life continues to be threatened and underrepresented in the archives. The cultural losses of this underrepresentation are incalculable, and future historians or other researchers working in archives may be doomed once again to learn about everyday people from the records of the dominant. This effect is even more pronounced for mobile-born ephemeral records.

The portability of mobile devices and the immediacy they lend to the records they help to generate are reflective of the larger social and cultural environment in which the mobile devices and records exist and work. The traces we leave behind as we make sense of our time, interact with our environments and with others around us on our mobile devices reflect larger social and cultural trends and speak to how we spend our time and what we value. As the next section shows, born-mobile, born-networked records also feed back recursively into the environment, further creating it.[11] In this way, born-mobile

[10] National Archives, "How to Look for Records of Medieval and Early Modern Family History," *National Archives,* accessed June 2017, http://www.nationalarchives.gov.uk/help-with-your-research/research-guides/medieval-early-modern-family-history/.
[11] David Beer and Roger Burrows, "Popular Culture, Digital Archives and the New Social Life of Data" Theory, *Culture & Society* 30.4 (2013): 47–71.

records are not only reflective of society, but are also involved in the important task of socio-cultural production, underscoring the importance of their preservation by archives.

The question of how archivists can account for the omission of ephemera in their collection is a more difficult one, while the mobile mode and all of its technical intricacies further compounds the issue. Even once the potential value of such records is acknowledged and intellectual space is made, the practical aspects of acquiring and preserving them may pose issues, as highlighted in Chapter One. It may also require new types of appraisal criteria, so that records traditionally judged against evidential and transactional criteria and thus deemed to have low archival value can now be adequately appraised via a rubric that makes room for their cultural value. It may require the restructuring of archival mandates to be more inclusive of personal born-mobile records that document everyday and organizational functions.

Social and Leisure Functions and the Cultural Work of Born-Mobile Records

The second type of personal function that mobile devices help to fulfill are social and leisure functions. Given the ubiquity of mobile devices, especially smartphones and tablets, in our everyday environment, it follows that they are increasingly outputting records reflecting our social lives and interactions as well as our leisure time. Born-mobile records arising out of social and leisure functions can be both the primary products and the by-products of these functions; they embody the interaction itself and/or document it via records and metadata left behind. Furthermore, they both arise out of and

further contribute to systems and culture in a recursive way.[12] This recursivity is especially critical from a postmodern archival standpoint; the records retained by archives should reflect how society is constructed and the systems that construct them. The archiving of born-mobile records is a key step towards achieving that goal, but it demands that archives make conceptual and practical space for records that have traditionally been regarded as frivolous or of lesser archival and enduring value. This next section begins by examining how mobile technologies help fulfill social and leisure functions and the types of records these functions may give rise to, and then moves into a theoretical discussion on the cultural work of born-mobile social and leisure records, further solidifying the case for their preservation by archives.

The larger shift away from desktop-centred, web-based internet connectivity to continuous networked mobile connectivity is an international phenomenon that has widespread lateral effects, one of which is the increased use of and output of records produced by apps. Some of the key social-media-related mobile trends are outlined here, based on the 2017 comScore report and the 2017 Ofcom Communications Market Report. Across the globe, apps hold the dominant share of total digital minutes spent on mobile devices (86% in Canada, 87% in the United States, 88% in Spain, 91% in Mexico, and 99% in China.)[13] Social media continues to occupy a primary spot among the many uses of mobile devices, accounting for 20% to 40% of total minutes spent on mobile devices.[14] Over 90% of Facebook users access it via the Facebook mobile app.[15] Other

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[12] David Beer and Roger Burrows, "Popular Culture, Digital Archives and the New Social Life of Data" *Theory, Culture & Society* 30.4 (2013): 49.
[13] comScore, 7.
[14] comScore, 28.
[15] Simon Kemp, "Digital in 2017: Global Overview," *We Are Social,* January 24, 2017, https://wearesocial.com/special-reports/digital-in-2017-global-overview, accessed October 9, 2017, p.63

social media apps such as Snapchat or Instagram that allow users to engage in creative social pursuits, such as sharing of personal photos and experiences in addition to social interaction, are on the rise.[16] Mobile messaging apps, such as Facebook Messenger, WhatsApp, Viber, or WeChat are also increasingly popular, steadily overtaking SMS and MMS.[17] Finally, image sharing is overtaking text messaging as the primary medium for communicating with friends and family.[18]

Examples of social and leisure functions fulfilled via mobile devices include accessing social media to document our days, reflect our opinions and desires, and build and maintain relationships with others, taking photographs or videos (especially with the intent to share them), and creating and consuming culture, including games, visual content, music, audio, and art. These functions and the records that are produced as a result are made possible by the intersection of mobility, instant access, and network connectivity. Countless applications exist in the app marketplace that allow users to fine-tune their devices to best meet their social and leisure needs. In addition, mobile devices, and smartphones in particular, have become the central node for meeting a variety of social and leisure needs. Joanna Zylinska writes that "the convergence of different media… has resulted in mobile phones doubling as both still and video cameras," while those she refers to as the members of the "YouTube and Flickr generation" are "contributing to the increasingly interlocked processes of media production, distribution,

[16] comScore, 34.
[17] comScore, 25.
[18] Ofcom, "2017 Communications Market Report: Bitesize," (2017), accessed online at https://www.ofcom.org.uk/research-and-data/multi-sector-research/cmr/cmr-2017/the-communications-market-bitesize, 6.

and consumption," leading to a wider "transformation of the media environment in the digital age."[19]

Social and leisure-related born-mobile records that arise out of the new media environment are doing important *cultural work.* David Beer and Roger Burrows have made an excellent case for the importance of data that is "actively both produced and consumed via acts of 'playbour,'" and argue that "we should take play seriously."[20] They argue that social and leisure engagement via new digital media "is creating new and vast forms of data about us, some of which is not necessarily transactional in content," and expound on "the manner in which these activities are creating new forms of social data—data generated as a by-product of new forms of popular cultural engagement… [and how] this by-product data also comes to constitute and reshape cultural forms and practices as they occur."[21] Beer and Burrows argue that social media lies at the heart of this cultural production; it has facilitated the increasing participation of people in the formation of media content:

> …the significant phenomena of the growing amount of 'labouring' people are undertaking as they 'play' with these new technologies: creating profiles; making status updates; distributing information; sharing files; uploading images; blogging; tweeting; and the rest… can be thought of as spaces of cultural engagement that extend the boundaries of the 'social factory' across everyday life.[22]

As a result of this increased engagement, "'ordinary' people have become much more prominent in media content creation."[23] The new visibility of everyday actors across

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[19] Joanna Zylinska, "On Bad Archives, Unruly Snappers and Liquid Photographs," *Photographies* 3:2, (September 2010), 139.
[20] Beer and Burrows, 48.
[21] Ibid., 49.
[22]Ibid., 49, citing Gill and Pratt, 2008, and Terranova, 2000.
[23] Ibid., 49.

social and cultural spaces, which mobile devices vastly contribute to, should be reflected accordingly in archival holdings.

Amelia Acker has also confronted the very difficult intersections of mobility and archival records, with special focus on the purposeful, incidental, and potential destruction of born-mobile records. Describing her research as having emerged out of "new cultures of recordkeeping supported by mobile device infrastructures and social media platforms," she exposes the critical need for a shift in the discourse surrounding born-mobile records and archiving in order to better reflect the upheaval that has occurred. She refers to this upheaval and the resulting new "personal digital archival practices" as "radical" because they "open up new possibilities for theories of, and questions about "evidence, value, selection, and control over digital archives."[24] Furthermore, she suggests that acts of born-mobile record destruction build on themselves recursively by shaping our ideas about what records should and should not be kept:

> These vignettes of destruction or promised-destruction, and more like them each day, figure into our cultural imagination of what communicating looks and feels like at the late beginning of the twenty-first century… these ghosts (as traces of appraisal practices) influence expectations of what should and should not be remembered in the future as part of personal and public archives created with mobile ICTs. Indeed, archives are anchored in forgetting as much as they are in remembering.[25]

The convergence of portable networked devices with social media has also led to new ways of experiencing and constructing self-identity, and making sense of the identities of others. Daniel Palmer has written about how online photo sharing works to "animate

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[24] Amelia Acker, "Radical Appraisal Practices and the Mobile Forensic Imaginary." *Archive Journal* 5 (1), 2015, http://www.archivejournal.net/issue/5/archives-remixed/radical-appraisal-practices-and-the-mobile-forensic-imaginary/, accessed August 8, 2017.
[25] Ibid.

history and memory" and "extend photography's role as a medium through which individuals confirm and explore their own identity."[26] He argues that social media platforms like Facebook or Flickr, which encourage the sharing of photographs contextualized by captions, work to affirm our identities and our ideas about the identities of others:

> As a technique of self-formation, they fulfill a similar function as the personal diary or blog—an attempt at biographical and narrative construction of oneself… By reconfiguring our everyday reality into a story form, we create a sense of order that is comforting; this appears particularly appealing given the exceptionally fragmented nature of our present reality.[27]

Citizenship Functions

The third type of born-mobile record described by the proposed heuristic is a record arising out of what I broadly classify as citizenship functions. Specifically, I refer to records that are created with mobile devices as humans take part in political organization, participation, or resistance; as well as in response to socio-political events or humanitarian crises. Access to mobile devices and in particular, smartphones, has increased worldwide, with unique mobile users having reached 66% global penetration as of January 2017, a growth of 5% (or 222 million people) worldwide since only February of the previous year.[28] Increased worldwide access to mobile devices and their supportive data networks and infrastructures mean that now more than ever, people have a new voice as citizens and in the political sphere. Immediate and continuous access to the

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[26] Daniel Palmer, "Emotional Archives: Online Photo Sharing and the Cultivation of the Self," *Photographies* 3:2 (September 2010), 155.
[27] Ibid., 167.
[28] Simon Kemp, "Digital in 2017."

internet via mobile devices allows most anyone with an internet-connected mobile device to contribute to society and to the historical record in ways that they previously could not.

This new voice has been especially vital to people in poorer or developing regions of the world. In these regions, the impact of widespread access to mobile technologies has been transformative, not only economically, but socially as well. In some cases (Indonesia or Myanmar, for example), mobile devices are people's first opportunity to have internet connectivity, the market having "skipped the desktop phase" and moved straight to mobile-only ownership.[29] Marcus Wohlsen explains this phenomenon in the developing world (referred to as "leapfrogging") as "moving straight from no internet at all to the web-shy world of mobile, due mainly to the lower cost of entry and the absence of the heavy physical infrastructure required to support broadband PC use."[30]

The sudden widespread availability of networked mobile devices in developing areas means that as recently as in the last few years, millions of people globally have gone from being limited to analogue or face-to-face communication to communicating via mobile networks. The resulting effects include the expansion of people's personal networks, greater connectivity, greater access to knowledge and resources, and the ability to coordinate and participate in citizenship activities—all activities which produce documentation to some degree. Within this documentation there are vast quantities of born-mobile, born-networked records of enduring archival value. In regions where political crises or acts of resistance are playing out, videos, photographs, mobile or text

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[29] comScore, p.36.; "In Dirt-Poor Myanmar, Smartphones are Transforming Finance," *The Economist* (Yangon, Mynanmar), October 12, 2017.
[30] Marcus Wohlsen, "The PC's Death Might Also be the Web's Demise," *Wired Magazine,* January 1, 2014, https://www.wired.com/2014/01/death-pc-also-mean-end-web/, accessed May 21, 2017.

messages, and even social media posts have the power to reflect realities "on the ground" and mobilize corresponding actions.

The records produced by networked mobile devices during acts of political resistance against systemic powers are of interest to archivists striving towards a human-centred, activist archive. As archival scholar Randall Jimerson has shown, archives themselves are sites of power and archivists engage in political action via the records they choose to collect and preserve.[31] Archivists are also not politically neutral; their work itself, by its very nature, involves the enactment of political ideas and power relations. Robert McIntosh and Verne Harris have shown that the ability of archivists to highlight certain records provides them with the immense power to shape social memory.[32] Promisingly, Harris, Michelle Caswell, Susan Pell, and others writing about activism in archives have shown that archivists can also harness the political power of archives and use it for good, so that archives become spaces for political engagement and social activism to real and positive human effect.

The Women's March on Washington Archives Project (WMWAP) and the People's Archive of Police Violence in Cleveland (PAPVC) are two examples of archives that are sites of political organization and resistance, and that *likely* contain born-mobile records. I underscore the word "likely" because their creators/curators of these archives do not go out of their way to distinguish born-mobile records from other records in the collections, an oversight or tendency on part of archivists discussed in more detail in Chapter One. For the purposes of the arguments made in this section, I work on the

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[31] Jimerson, "Archives for All."
[32] Robert McIntosh, "The Great War, Archives, and Modern Memory," *Archivaria* 46 (Fall 1998): 1–31; Harris, *Exploring Archives.*

assumption that the portability and continuous connectivity offered by networked mobile devices, as well as their increasing role in the documentation of daily life and events around us, means that the records being solicited and submitted to these archives are at least in part comprised of born-mobile records.

WMWAP was launched in late 2016 by a group of archivists from the Society of American Archivists' Women Archivists Section "to ensure the preservation of women's voices and responses to politics and legislation in wake of the intensely controversial 2016 elections." The goal of the project organizers is to document the movement in a way that "captures [its] use of new-wave grassroots activism" and to show "the scope of the movement and the range of reasons women are marching" and to ensure that "diverse women's political resistance may be documented in their own words as they are so often silenced and lost to history."[33]

The PAPVC was created in response to epidemic levels of police brutality in the United States against minorities:

> In 2015, more than 1100 people died at the hands of or in the custody of American police officers. A disproportionate number of those killed were black, poor, transgender, mentally ill, or a combination of all four. Second, police reports of many of these deaths--including Mya Hall, Natasha McKenna, Walter Scott, Sandra Bland, and Samuel DuBose--narrate a sequence of events that video or forensic evidence later disproved or challenged. In many of these and other cases, the initial police reports allowed officers to completely or nearly escape accountability. It is within this context that A People's Archive of Police Violence in Cleveland is established. May this online space for healing, accountability, and justice continue to exist so long as the national crisis of police violence persists.[34]

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[33] Danielle Russell and Katrina Vandeven, "Project Spotlight: Women's March on Washington Archives Project | Women Archivists Section," *The Society of American Archivists' Women Archivists Section*, January 10, 2017, https://womenarchivistsroundtable.wordpress.com/2017/01/10/project-spotlight-womens-march-on-washington-archives-project/.

[34] A People's Archive of Police Violence in Cleveland, "About," http://www.archivingpoliceviolence.org/purpose, accessed June 12, 2017.

Both the WMWAP and the PAPVC are community-driven archives that solicit records from the public. As such, their collections include records that would typically be overlooked by traditional, institutional archives and records that give voice to minorities or otherwise underrepresented members of society. This includes ephemera that springs up during acts of resistance, such as protest posters and testimonials or oral histories of citizens including women and inmates. The submission requirements identified on the PAPVC "Tell Your Story/Contribute" page ask that contributors have the copyright or permission to share their submissions. A dropdown menu asks the contributor to select whether they are contributing a narrative, an image, audio, oral history, or video. In terms of content, there are no delineations as to what contributed records should entail other than that they represent a response of "any self-defined Cleveland resident or community member who has observed, experienced, or otherwise been directly or indirectly impacted by police violence in Cleveland, [including but not limited to] victims, survivors, family members or friends of survivors, or concerned citizens."[35]

The WMWAP archive project is unique in that the materials it collects are not archived by a single organizing repository, nor is the archive intellectually or physically housed in a single location. Instead, the collection is divided into two parts: an online repository for oral histories and photographs collected across the United States and at sister marches abroad, and local, state-level repositories across the country that act as regional points for processing and housing physical materials collected at the marches. Spreading the physical archive across different repositories ensures that a single institution is not tasked with doing the bulk of the work of appraising, processing,

[35] PAPVC, "Contribute," "People." http://www.archivingpoliceviolence.org/contribution; http://www.archivingpoliceviolence.org/people, accessed June 4, 2017.

describing, and making accessible the materials. It also follows in the documentation strategy vein of archiving first proposed by Helen Willa Samuels, which suggested a collaborative approach to records preservation by their various creators.[36] The born-digital collection is organized and stored using Open Science Framework (OSF, an open-source, cloud-based collaborative project and file storage database) and Google Docs. The end goal of the organizers is to eventually have an "aggregate digital platform that will allow cohesive research," by joining the digital online repository with the physical collections once they have undergone sufficient processing to be added to the platform.[37]

The WMWAP and PAPVC collections embody autonomous, activist archives that are "less institutionalized and horizontally organized movements," as described by Susan Pell.[38] Pell writes that such archives are interesting because they both "reaffirm the archive as a key site of political power, yet at the same time they subvert the archive's role as a tool of domination."[39] They have risen in direct challenge to the institutional archive and to professional archiving, to tell the stories that these archives omit, no matter whether that omission is explicit or complicit. Jarrett Drake, the former digital archivist at Princeton University, explains his decision to leave the archival profession in pursuit of deinstitutionalized, grassroots, activist archives for exactly these reasons. He argues that public or institutionalized archives tend to entrench dominant power and dominant narratives, even while claiming to be representative and inclusive:

> … the archival profession, like others, performs a crucial part in systemic violence, hyper-concentrations of poverty, and global capitalism. Professionalism, which consists of the actions taken to ensure the viability and perpetuity of one's line of

[36] Helen Willa Samuels, "Who Controls the Past?," *The American Archivist* 49:2 (Spring 1986), 109–124.
[37] Ibid.
[38] Susan Pell, "Radicalizing the Politics of the Archive: An Ethnographic Reading of an Activist Archive," *Archivaria* 80, (Fall 2015): 80.
[39] Ibid.

> work, explains why the main professional archival organization in the United States needs to be convinced to declare publicly that black lives matter, even though individuals in that organization's leadership claim to believe so privately. Neutrality and objectivity are professionalism's gift and curse. Professionalism rewards (some of) its professionals with job security, healthcare, retirement plans, paid conference travel, and more… The archival profession =/= the archival field. I will remain in the latter, committed to understanding the transformative potential of independent, grassroots archival projects.[40]

Mobile devices and their supporting networks open a critical pathway for the development and maintenance of deinstitutionalized, activist archives. The records they help to create are used to carve out a place for minority voices in the historical narrative. As such, mobile devices are inherently political tools; access to these devices and to the internet allow people a continuous and immediate method of enacting political or citizen agency, with tangible real-life consequences. They help people engage in political and citizenship work because they are a central node for action that cuts across all aspects of people's lives. They are a primary mode of documenting acts of oppression and acts of resistance to that oppression via records made by the very people archiving them. In short, mobile devices have been critically important to the democratization of society, and archives are called to take stock of their mandates and practices to ensure that this democratization is aptly reflected. Even contemporary activist archives like the WMWAP and PAPVC, which are at least partially built upon born-mobile collections, could further enrich the contextual provenance and highlight the immediacy of their records by distinguishing born-mobile records from other types of digital records in their collections. This could be as simple as allowing items in a collection to be tagged or sortable by mode of production.

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[40] Jarrett Drake, "I'm Leaving the Archival Profession: It's Better This Way," *On Archivy,* https://medium.com/on-archivy/im-leaving-the-archival-profession-it-s-better-this-way-ed631c6d72fe*,* June 26, 2017, accessed June 29, 2017.

One corollary danger of using mobile devices and born-mobile records for activism is that they can potentially put contributors or subjects at risk. For example, people depicted in photographs or video footage, or represented in oral testimonies, may be vulnerable to state surveillance as actors in the resistance to a government or institution in power. Oppressive regimes and entrenched systems of power are motivated to silence people working to dismantle these systems through social justice and political resistance, and activists and whistleblowers often face surveillance or other punishments for speaking out. Those resisting from a place of subordinate power are even more at risk for unjust punishment for their involvement. Surveillance of activists by authorities is real and pervasive and is an effective tactic used in the oppression that activist archives such as PAPVC are working against. Bergis Jules, a digital archivist involved with the "Documenting the Now" project to build free, open-source tools to aid in the collection, analysis, and sharing of social media data, highlights some of the risks and ethical challenges that arise out of collecting records of resistance. He discusses how social media platforms such as Twitter can help amplify the voices and create spaces for communities historically omitted by the archive, and create space for movements such as Black Lives Matter. At the same time, he points out the very tangible risks and challenges of this work, including the monitoring of social media accounts by law enforcement and the need to ensure that such collections are not used by law enforcement against people who are already marginalized.[41]

[41] Bergis Jules, "Surveillance and Social Media Archiving." DocNow 3 Oct 2016. Available: https://news.docnow.io/surveillance-and-social-media-archiving-7ea21b77b807#.8ktril3i7. Accessed October 11, 2017.

The ability of mobile devices to create and transmit data via networks, coupled with their portability, allows them to be used to create born-digital records that are distinguished by their *immediacy.* Immediacy is another way in which the mobile device as a mode of creation helps to inform the record type. As Michelle Caswell has shown in her instrumental work on cellphone-generated records in archives, one of the defining features of born-mobile records is that they make it possible to engage in event-based archiving, i.e., to create archival collections that arise out of records made during or immediately after a critical event such as an environmental or violent disaster.[42] Such records are made as a function of "being there," a factor that could enrich their provenance, and arguably, their authenticity.

At the same time, the ability of mobile devices to record an event from a multiplicity of angles and personal human experiences further enriches the historical record. This is especially instructive in archival collections that arise in response to crisis events, such as the September 11th Digital Archive (911DA). Created and managed by the City University of New York Graduate Center's American Social History Project and the Roy Rosenzweig Center for History and New Media (RRCHNM) at George Mason University, 911DA "uses electronic media to collect, preserve, and present the history of the September 11, 2001 attacks in New York, Virginia, and Pennsylvania, and their aftermath."[43] The repository contains over 150,000 digital items and in 2003, became the first major digital acquisition accepted into the Library of Congress.

Within the limited archival literature on the impact of the cellphone on records creation and archiving, the terrorist attacks of September 11th, 2001, have received

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[42] Caswell, 136.
[43] September 11 Digital Archive, "About," accessed June 28, 2017, http://911digitalarchive.org/about.

considerable attention. Michelle Caswell, as one of the few archivists so far to have confronted the challenges and opportunities of born-mobile records, identifies the events of September 11th as "a pivotal moment proving the importance of this new form."[44] She points out that in the only two other mentions in the literature at the time on the topic of cellphone-generated records, both Rick Barry and Richard Cox refer to this event as a turning point from an archival perspective.[45] The phone records produced in the wake of the attacks, including images, videos, text messages, and voicemails recorded that day, as well as the records produced afterwards in response to it, are instrumental in adding to the understanding of the history of this shared, influential event from a multitude of perspectives. Tom Scheinfeldt, past managing director of the September 11 Digital Archive, one of the few repositories Caswell could locate that was making a concerted effort to solicit and retain cellphone-generated records, summarizes the effects of immediacy as follows:

> In the past, recorded responses to events were either somewhat delayed (as in the case of written letters) or they were produced by governments or institutions (for instance, in the case of radio and television broadcasts). We have very few examples prior to September 11 of ordinary people documenting their own experiences in real time as historical events unfolded. 9/11 is the first event for which we have preserved a large body of these kinds of sources. . . . This may provide an exciting new perspective from which to write and understand history and promises to democratize the historical record in ways we would not have expected just a decade ago.[46]

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[44] Caswell, 135.
[45] Ibid.; Richard J. Cox and The University of Pittsburgh Archives Students, "Machines in the Archives: Technology and the Coming Transformation of Archival Reference," *First Monday* 12, no. 11 (2007), http://firstmonday.org/ojs/index.php/fm/article/view/2029; Rick Barry, "Ya Got Trouble (Right Here in River City)," *My Best Docs*, May 2005, http://www.mybestdocs.com/barry-r-nara20th-anniversary.htm.
[46] Tom Scheinfeldt, quoted in Caswell, 137.

The ability to record an event from a first-person perspective as it unfolds is not new. It can be argued that most records are the product of a response to an event, whether it is a drawn-out, longstanding event such as a war, or a comparatively short one, such as a demonstration. Even if there was a slight delay in creating a record that relays an event, such as that involved with putting pen to paper, or setting up a camera and clicking the shutter button, it can be argued that those records were also created in the thick of an event, with immediacy. What has changed on a large scale is that, whereas before, one usually had to come prepared to make a record by carrying writing supplies to the battlefront or putting film in their camera and carrying it with them, now, almost everyone has a recording device in their pocket at all times, and can use it to record an event while it is still in the midst of unfolding. The portability and ubiquity of mobile devices means that more records are created than ever before, and more perspectives are captured than ever were before. The archiving of the September 11th mobile records provides a rare opportunity to preserve and make accessible the perspectives of the variety of actors in this large-scale shared event—not just government or institutional voices, but those of victims and their families, first responders, first-hand witnesses, and ordinary observers on a national and global scale.

Given the critical role of mobile-generated records to the enactment of citizenship, archivists striving to create more inclusive, deinstitutionalized, radicalized archives that are more representative of minority and silenced voices would do well to include these types of records in their collections. Archivists concerned with building collections that are more indicative of social relationships or trends in popular culture could look to born-mobile records, which offer an immense source of culturally rich

material by reflecting how people interact socially with one another and how they spend their leisure time and are thus indicative of larger social trends and values. Finally, archivists interested in subverting traditional notions of what makes records valuable could turn to personal ephemeral records that arise out of everyday organizational functions, which could have values that fall outside of evidential, transactional, legalistic value. Clearly, while the challenges of archiving born-mobile records are very real, the opportunities of doing so are just as immense for archivists working towards postmodern archives.

Chapter Three: Networked Mobile Devices and Public Programming in Archives

It is impossible to examine the widespread effects of networked mobile devices from an archival perspective without considering how they have impacted the end user and the public programming side of archives. The widespread use of mobile devices, and in particular, internet-connected smartphones and tablets, means that users of archives are increasingly relying on these devices to search for, discover, and access archival records, as well as to interact with archival repositories. Mobile devices also open up new avenues for increasing public engagement with archival records. Yet, although mobile devices are becoming ubiquitous in both work and play, very little research has been done on how mobile devices have affected archival access. This dearth of research on networked mobility and public programming in archives echoes the tendency identified in Chapters One and Two of archives to neglect the impact of mobile devices on multiple aspects of the field. I suggest that access to archival resources via internet-connected mobile devices poses some of the same challenges and opportunities as encountered with desktop access to online archival resources, as will be described in more detail in this chapter. At the same time, mobility presents some unique and specific challenges and opportunities for archival public programming that require closer examination. The aim of this chapter, then, is to clarify the potential impact of mobile devices on the users and uses of archives and to identify some key ways in which mobile devices and public programming intersect, in order to open clear avenues for future research and improvement. Using theoretical analysis and tracing key developments in the field on this topic, this chapter presents the effects of mobile devices in two ways: from the perspective of the end-user,

that is, the person searching for, accessing, and interacting with archival repositories and archival records; and from the perspective of the archive itself, looking at how archives can tap into the opportunities proffered by mobile technologies to further their outreach and public programming agendas. These explorations are grounded in wider archival theory on public programming, usability, access, and resource discovery.

Resource Discovery: Search, Discovery, and Access and the Rise of the Mobile-Connected User

Resource discovery by users in archives can be seen as consisting of three related phases: search, discovery, and access. In the search process, users attempt to locate resources that will meet their needs. In the discovery process, which flows directly from the search process, users identify specific resources as useful and as being able to meet their needs. The significance of the discovery phase hinges on the third phase, access, wherein users are able to work with the resource, either on site or virtually, in a way that meets their needs and allows them to derive meaning out of the resource. Historically, concern over users' ability to search, discover, and access records in archives has been a part of the wider archival initiative known as public programming, which is meant to raise public awareness about an archives, its work, and its holdings, and to increase both use and usability of its resources.

There is debate in the archival field about when Canadian archivists first began to incorporate initiatives aimed at enhancing user awareness of archives and experience

with archival research.[1] Archivist Ian Wilson maintains that public programming was a concern of the early archivists, and points to efforts made by Arthur Doughty to spread awareness about the Public Archives of Canada and its work, both at home and abroad.[2] Other archival scholars, such as Gabrielle Blais and David Enns, argue that public programming is a development of the late twentieth century, and that initiatives aimed at increasing use and enhancing user experience were not a primary point of concern until the 1980s. Blais and Enns suggest that for the early archivists, such as Douglas Brymner and Arthur Doughty, the primary concern was acquiring, arranging, and describing records, while any focus on usability was limited to "the preparation of research guides and assistance to historians as they performed their research."[3]

Starting in the 1990s, the archival community began to recognize and address issues of public programming and usability in archives on a wider scale. Ian Anderson states that early usability studies were largely oriented towards the management, or "supply side" of public programming, rather than the "demand side." They focused on "the organization of the user services within the archives; the education and disciplining of the user group; and the provision of resources."[4] According to Elsie Freeman, before they began to investigate user needs, archives were hindered by the assumption that, "because archivists perform reference work, they are oriented towards the user."[5] Thus,

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[1] Alison P. Gregor, "Going Public: A History of Public Programming at the Hudson's Bay Company Archives," (MA thesis, University of Manitoba, 2001).
[2] Ian Wilson, "Shortt and Doughty: The Cultural Role of the Public Archives of Canada, 1904–1935," *The Canadian Archivist* 2 (1973): 5.
[3] Gabrielle Blais and David Enns, "From Paper Archives to People Archives: Public Programming in the Management of Archives," *Archivaria* 31 (Winter 1990–91): 101–113
[4] Ian G. Anderson, "Are You Being Served? Historians and the Search for Primary Sources," *Archivaria* 58 (2004): 85; and Michael Cook, *The Management of Information from Archives* (Aldershot, 1999), 150 (cited in Anderson, "Are You Being Served?").
[5] Elsie T. Freeman, "In the Eye of the Beholder: Archives Administration from the User's Point of View," *The American Archivist* 47 (1984): 112 (cited in Gregor, "Going Public.")

much of the earlier work on usability did not examine *how* users search and discover records, or whether they were able to access the records they need, but rather elaborated on the various services archives were providing and outlined archives' public programming activities.

More recently, archivists have tried to remedy the gap in their knowledge of users and usability by organizing systematic user surveys to gain a more precise understanding of the user experience (although the research has predominantly focused on the search and discovery phases of the resource discovery process). A number of archival scholars, including Anderson in the United Kingdom; Wendy Duff, Barbara Craig, and Joan Cherry in Canada; and Helen Tibbo in the United States, have researched academic historians' uses of archives in an attempt to determine how this important set of users conducts their searching and what barriers they may be encountering at the discovery and access stages that might be keeping them from meeting their research goals.[6] Wendy Duff and Catherine Johnson have also looked at the information-seeking behaviour of genealogists, who constitute the majority of users in many archives.[7] The hope is that this research will provide insight into the resource discovery process and stimulate archives to tailor their programming to enhance services to better meet users' needs. This is becoming especially crucial in the digital and mobile-connected age, as users are increasingly doing their research and archival activity online, not just through desktop access but also through network-connected mobile devices.

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[6] Anderson, "Are You Being Served?"; Wendy Duff, Barbara Craig, and Joan Cherry, "Finding and Using Archival Resources: A Cross-Canada Survey of Historians Studying Canadian History," Archivaria 58 (Fall 2004):51–80; Helen R. Tibbo, "Primarily History: How US Historians Search for Primary Sources at the Dawn of the Digital Age," *The American Archivist* 66, no. 1 (Spring/Summer 2003): 9–50.
[7] Wendy Duff and Catherine Johnson, "Where is the List with All the Names? Information-Seeking Behavior of Genealogists," *The American Archivist* 66 (2003): 79–95.

Indeed, the digital information era has had a profound impact on the resource discovery process, shaping the way archives manage and present their records and fundamentally altering the way users locate and interact with archival materials. Recent scholarship has shown that users of archives are increasingly searching, discovering, and accessing archival materials via the online environment. The changing user behaviours and needs in the digital environment have been acknowledged by archivists, and to some extent, archives have tried to adapt their programs and technologies in response to these changes. Most archives are now represented, to some degree, via a website, whether it is through providing information about their mandates and collection policies, providing finding aids, or providing access to digitized material.

Yet, studies have found that the current resource discovery landscape across archives' websites does not tend to accurately reflect the way users search, discover, and access materials.[8] As a result, archives may not be reaching the widest possible audience and may in fact be losing users who do not find what they want due to unsuccessful interactions with websites. Helen Tibbo has summarized information-seeking behaviour in the digital era, tracing its evolution starting with "the advent of the world wide web, electronic finding aids, digitized collections, and an increasingly pervasive networked environment."[9] Like Duff, Craig, and Cherry, she has found that researchers rely on a wide array of sources in their search for the right archival records; yet, she argues that archives have been too slow to synthesize users' desires to search for and locate useful

[8] Andrea Johnson, "Users, Use, and Context: Supporting Interaction between Users and Digital Archives," in *What are Archives? Cultural and Theoretical Perspectives: A Reader,* edited by Louise Craven (Hampshire: Ashgate Publishers, 2008), 145.
[9] Tibbo, 9.

resources through traditional pathways (such as footnotes) with their increasing reliance on the digital sphere in conducting their research. Tibbo's piece was published in 2003, at a time when internet-capable smartphones were just beginning to take the place of basic cell phones, so it makes sense that her research left mobile devices out of the digital discussion. At the same, there has been very little usability research in the archival field since then to account for the huge shift towards mobile internet usage in the last decade and a half. Recognizing how archives may be failing to meet the needs of mobile-connected users is an important step towards enabling better searching, discovery, and access for these users. This is crucial, as creating a more effective and satisfying resource discovery experience helps archives to retain current users and draw new ones.

The need to understand the archival experience from a user's perspective and to tailor the search and discovery processes to better suit their needs is especially important in the pervasive mobile computing environment. The rapid and widespread growth in personal mobile device ownership outlined in Chapters One and Two indicates that people are increasingly relying on mobile devices for all kinds of functions. Archives must prepare for the fact that, as a result of this pervasive and growing mobile device access, users will naturally turn to their mobile devices in order to search, locate, and access archival records online. While I was unable to locate any statistics regarding mobile-device-enabled points of entry into archival resource discovery, I suggest that this is likely especially the case for casual users, as opposed to scholars or other more invested researchers. The research that *has* been done on online access to archival resources shows a clear trend: online users form an increasingly critical part of archives' user base. The percentage of users relying on online searches has grown steadily. Online

access now tends to the first (and often, only) point of contact between a user and archive during the search phase, and a 2008 study by Andrea Johnson found that 70% of users surveyed "stated they would not visit their local archive."[10] According to Wendy Duff, in Canada, online users are becoming the primary user base of archives. For example, there were 6,700,000 hits to the Ontario archives website and only 19,062 on-site visits in 2000–2001; and only 349,682 on-site visitors at Library and Archives Canada, as compared to 72 million hits to LAC's website.[11] More current research that reflects the latest statistics is needed, but it is safe to assume for now that this trend is only continuing, and that it has even been exacerbated by the growing access to internet-connected mobile devices. Interestingly, Amanda Hill suggests that online users "may be completely unaware that they are users at all; having found what they needed and moved on." Yet, she points out, it is just as important to take them into consideration as "the more tangible users who occupy the tables in our search rooms."[12]

In general, the issues facing the mobile-connected archives user are the same issues facing users who access archives via desktop connections. One major and critical area of archival resource discovery in the mobile computing environment that demands an immediate response from those in the field who still neglect it is the matter of mobile optimization. Various studies of online searching behaviour have found that users engage in a scanning process upon entering a website and during browsing. They scan the main headings and important headers to determine if the website will contain relevant

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[10] Johnson, "Supporting Interaction Between Users and Digital Archives," 147.
[11] Wendy Duff, "Understanding the Information-Seeking Behaviour of Archival Researchers in a Digital Age: Paths, Processes and Preferences," *Proceedings of the DLM Forum 2002* (Luxembourg, 2002), 331.
[12] Amanda Hill, "Serving the Invisible Researcher: Meeting the Needs of Online Users," *Journal of the Society of Archivists* 25:2 (2008): 139.

information and "stop reading when it no longer fits within their framework."[13] Thus, for an archive website to create a more efficient, more effective, and more satisfying user experience, it must present information in a concise, appealing manner, while ensuring that readers can quickly determine from headings and hyperlinked text what kind of information they will find upon further examination. Archive websites that lack mobile optimization may be unintuitive, cluttered, poorly displayed, or otherwise rendered effectively unusable on mobile interfaces. Archives must be cognizant of increasing mobile use and ensure that the above factors are also met in their public mobile interfaces. This may require that archivists work with IT programming and design professionals to ensure that their website content translates well to a mobile interface via an intuitive, attractive, and easy-to-use mobile-optimized site that still delivers similar programming as the desktop website. This may pose a particular challenge for archives facing budget constraints. Although it offers the best chance to service the needs of mobile-based users, it may also pose special challenges to archives that offer robust, complex, contextually-linked search and access databases.

The fundamental archival need to represent contextual links between records (represented in the digital environment as information objects) poses two specific issues from a user's perspective. First, the need for archives to represent contextual and hierarchical relationships between records is not in harmony with the way users are used to conducting searches and finding material in an online environment. This issue leads to frustrating or unsuccessful searches, which then thwart the discovery and access phases. Second, the online archival environment severs the relationship between user and

[13] Reijo Savolainen and Jarkko Kari, "Facing and Bridging Gaps in Web Searching," *Information Processing and Management* 42 (2006): 521

archivist, which has been shown to be a crucial part of successful resource discovery. Without the archivist to mediate and provide context, users often encounter roadblocks, both in terms of locating the right material and in making sense of it once they have found it.

The need for archives to represent context and provenance in organizing, managing, and presenting their records is in disharmony with the way users tend to structure their searches. An archival record is more valuable when seen in the larger context of its creation, allowing a user to understand why, when, and how it was created and alongside which other records. Unlike libraries, which are able to manage information objects on the item level, archives tend to structure items hierarchically and in relation to each other, and a description may not be representative of a whole item or its entire content. In addition, as archival scholar Greg Bak has suggested, electronic records classification is still largely bound to classification systems derived for analogue records, which represent a linear relationship between record and its corresponding file code. Bak argues that in the digital era, free of this constraint of paper-era archiving, item-level classification and management of archival records is possible, and may in fact be more desirable and appropriate in electronics records management systems.[14]

Mobile-device-based users of archives may find it difficult to benefit from the very important role of archivists in the contextualization of records. The archivist's ability to provide context has been identified as an important aspect of successful archival research by postmodern archivists such as Tom Nesmith and Terry Cook.[15] Terry Cook

[14] Greg Bak, "Continuous Classification: Capturing Dynamic Relationships Among Information Resources," *Archival Science* 12 (September 2012): 287–318.
[15] See for example, Nesmith, "Seeing Archives," 24–41 and "Reopening Archives,"259–274.

stresses the importance of contextualization of finding aids and resource descriptions and advocates a "material-oriented" approach towards description that stresses "the contextual significance of the document." He argues that archivists' ability to provide rich contextual information for records is ultimately of more benefit to users than unnecessarily loading them down "with facts and copies of detached documents floating around devoid of context."[16] However, mobile-device-based users of archives who interact with the archive via a virtual environment may never come in contact with an archivist, and are thus left to either find the contextual information about their research materials on their own, or from other sources that may not provide the necessary information. One way around this is to make access to an archivist easy and apparent, even via mobile interfaces, for example, by including easily-located mobile support chat spaces that connect users to archivists that can then provide guidance. Although this is a very involved and resource-heavy solution, it is also an extension of already existing reference functions, and incorporating this feature may simply be a case of restructuring of reference archivists' time to better service the needs of their mobile-based users.

Andrea Johnson found that the task of contextualizing records posed a particular problem for online users of archives, and that users often had trouble connecting specific digital objects with their material versions or had trouble fitting the object into the larger perspective.[17] Elizabeth Yakel and Deborah Torres found that for users to work effectively with sources, they must possess what they have termed 'archival intelligence'—"the knowledge about the environment in which the search for primary

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[16] Terry Cook, "Viewing the World Upside Down: Reflections on the Theoretical Underpinnings of Archival Programming," *Archivaria* 31 (Winter 1990–1991): 131.
[17] Johnson, "Supporting Interaction Between Users and Digital Archives," 146.

sources is being conducted," as well as the "researcher's knowledge of archival principles, practices, and institutions."[18] Archives must take into account the fact that not all online users possess expert levels of archival intelligence, and that even expert users may not have a complete understanding of "archival theory, practice, and procedures."[19] This may especially be the case for mobile-based users of archives, who likely represent a disproportionate amount of casual users.

Before resource discovery shifted on a wide scale to the online environment, archivists tended to compensate for ineffective finding aids, using their experience and knowledge gained in the archive to point users in the right direction. Today, the digital environment has altered this system of interaction. Users are increasingly undertaking searches outside of archives, not only via desktops from their homes or offices, but via networked mobile devices, from anywhere they are. These users are especially at risk of experiencing unsuccessful searches because they lack the supports traditionally provided in in-person visits.[20] As a result, archives may lose users who tend to encounter unsuccessful online searches and are unable to find material that has not been represented accurately online and eluded an archive's search engine. Richard Butterworth suggests online tutorials and "annotation stating what the collection can be used for, as opposed to the standard archival description," as ways of alleviating the effects of this digital-based disintermediation.

Savolainen and Kari identified the most commonly encountered issues in online searching in general. Unsuccessful searches could be attributed to a lack of relevant

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[18] Elizabeth Yakel and Deborah Torres, "AI: Archival Intelligence and User Expertise," *The American Archivist* 66 (Spring 2003): 51.
[19] Ibid.
[20] Richard Butterworth, as cited in Johnson, "Users, Use, and Context," 152.

material, inaccessible content, information overload (or "too many hits"), no access to a web page as a result of broken links or other technical issues, inability to define relevant search terms, and issues posed by reaching a research crossroads (rendering users "unable to decide between alternative links).[21] For users of archive websites, including mobile-based users, it is likely that problems stemming from information overload and inability to specify correct search terms are encountered more often for the reasons identified above.

The discovery phase of resource discovery stems directly from the search phase. In this phase, if a user has had a successful search process that has yielded relevant and useful results, he or she then identifies a specific resource as useful and as being able to meet their research needs. For the mobile-based user, arriving at the discovery phase may be complicated by the lack of an archivist as a mediator. Johnson states that "having successfully navigated the search environment and yielded results, the user can still be thwarted at this stage in the interaction process, as they cannot contextualize the information without support."[22] Another potential area where online-based resource discovery can falter is that it can produce a false sense of security for researchers in terms of the scope and comprehensiveness of the source material that is retrievable via online searching. Instant access to a wide breadth of resources via an online search can provide what Ian Milligan refers to as "illusionary order."[23]

The access phase of resource discovery is a key site where mobile-device-based access to online archival resources could lag behind desktop-based use. The access phase

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[21] Savolainen and Kari, "Facing and Bridging Gaps in Web Searching," 527.
[22] Johnson, "Users, Use, and Context," 153.
[23] Ian Milligan, "Illusionary Order: Online Databases, Optical Character Recognition, and Canadian History, 1997–2010," *The Canadian Historical Review* 94:4 (2013): 540–569.

is important to consider in terms of usability and resource discovery, for this is the phase that gives significance to the search and discovery phases preceding it. Once users have searched for, and located, the resources that will meet their research needs, they must be able to gain access to them so that they can enter the next stage of their work, in which they can assess the records and derive meaning out of them. Here again, the importance of providing robust, fast-loading, mobile-optimized services is apparent.

Archives hold significant power in determining user access to records, not just geographically or physically, but also intellectually, "through their policies, reference tools, and advocacy efforts."[24] By acknowledging increased mobile-based usership and responding to it appropriately vis-à-vis the resource discovery side of public programming, archives can remove some of the barriers faced by the rapidly growing mobile base of users.

Users may be also be hindered by the geographic location of a record or by a lack of resources (in terms of travel costs, effort, and time) that would allow them to access a needed record first-hand. Here, the importance of widespread networked mobile device use becomes apparent. Mobile devices are increasingly the mode by which people access the internet; this connectivity translates to archival access for mobile users. The importance of making records (or at the very least, finding aids) available in a digital format also becomes evident. An archive that contains digitized content is more able to provide instant access to users, independent of their physical location. A successful resource discovery process is one in which users who have discovered their material successfully can continue through to the next phase of their research by gaining access to

[24] Elizabeth Yakel, "Thinking Inside and Outside the Boxes: Archival Reference Services at the Turn of the Century," *Archivaria* 49 (Spring 2000): 141.

their desired material, whether it is through digitized content or clear instructions for taking the next steps to access the record in person. Archives that can provide access to records digitally benefit from providing a flexible, and efficient resource discovery process for users.

Most archives struggle with resources, whether it be in the form of space, time, and supplies to process a backlog in the collection, trained and capable staff, or the appropriate resources necessary to build and maintain digital collections. Incorporating mobile-born records or updating their websites to ensure mobile optimization may require that archives reallocate their resources or prioritize collections differently than they have in the past. For many archives, it may not be a realistic option for the time being. It is worth noting, however, that many established archives have faced and overcome a similar challenge with incorporating electronic and digitized records—or, for some archives—with the switch from paper finding aids to digital ones found on their website. The change towards a mobile-friendly archive may be piecemeal or gradual for some archives. One prospect that may offer particular promise for under-resources archives is to capitalize on the participatory model of archiving, described below.

Mobile Computing Devices and Participatory Archiving

In describing their holdings, archives necessarily employ language that includes and excludes. Each user approaches resource discovery in a different way, guided by their own motives, and by their understanding of their sources, their research, and the archive itself. The more ways in which an archive can help represent and describe their holdings, the more likely it is that each user will be able to find what they are looking for. Allowing

users to interpret and describe digitized material, for example, may open the door for multilingual finding aids, a luxury that most archives are unable to provide due to limited resources. Furthermore, it can help create more inclusive, representative, and participatory archives. The concept of harnessing the power of users for the benefit of everyone is part of the larger trend in archives towards participatory archives applications.

Mobile devices offer a prime avenue for the creative application of participatory concepts, which has been shown to be of great benefit to archives. Steve Bailey lists seven types of "Web 2.0" service types: blogs, wikis, social bookmarking, media-sharing services, collaborative editing tools, and syndication and notification technologies.[25] Mary Samouelien defines "Web 2.0" as the tendency of the web to move towards becoming a "shared environment… that embraces collective intelligence and participation, and affords previously passive recipients of content the opportunity to engage with, combine, share, and 'mash-up' information in new and imaginative ways."[26] Many archives have adapted aspects of participatory archiving into their digital environments, for example, by launching blogs, and engaging with and creating a presence across social networking websites such as Twitter, Facebook, YouTube, and Instagram, which, as research has shown, are increasingly accessed via mobile interfaces.[27] This has allowed them to reach out to new users and to existing users in new ways. Yet, as Theimer suggests, there is more to participatory archives than simply

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[25] Steve Bailey, *Managing the Crowd: Rethinking Records Management for the Web 2.0 World"* (London: Facet Publishing, 2008), 26.
[26] Mary Samouelien, "Embracing Web 2.0: Archives and the Newest Generation of Web Applications," *The American Archivist* 72 (Spring/Summer 2009): 43.
[27] The latest comScore report found that social media accounts for a third of mobile minutes. comScore, 28.

maintaining a presence across social networks—its successful integration in archives involves a "comprehensive shift in archival thinking and practice."[28] Theimer suggests that an archive that embraces "Web 2.0" concepts is "user centered, embraces opportunities to use technology to share collections, interacts with users, and improves internal efficiency."[29]

Participatory model concepts such as tagging and social media participation are a natural extension of the mobile media environment, and mobile-based users of archives should be comfortable engaging with archival resources this way. Archives should leverage the ability of creative applications of these technologies to benefit their mobile-based users by encouraging their development. The concepts of crowdsourcing and participatory archives offer a strategy for enriching descriptions and offering multiple points of access into a record. Elizabeth Yakel has shown that the participatory archive concept can be successfully employed to enhance user experience and allow users to interact with and make better contextual sense of online archival material. Research has also shown that online users of archives want to contribute—they wish to be "active participants, not passive consumers," in their interactions with online archives.[30] Yet, despite this fact, and the potential successes of participatory archiving, many archivists tend to be wary of moving "away from the traditional relationship between archivist and researcher."[31] It is important for archivists to understand that allowing users to contribute through interactive finding aids and holdings need not render the archivist powerless over

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[28] Kate Theimer, "What Is The Meaning of Archives 2.0?," *The American Archivist* 58 (Spring/Summer 2008): 58.
[29] Ibid., 60.
[30] Johnson, "Users, Use, and Context," 158.
[31] Samouleinen, "Embracing Web 2.0," 49.

the holdings; archivists may continue to hold final authority over digital material. Ultimately, allowing for shared authority over archival materials supports the postmodern archival paradigm. As Mary Flanagan and Peter Carini suggest, "the diverse tags generated by crowdsourcing projects may… mean that institutions will need to reflect upon the new types of knowledge that might surface—new classifications, observations, descriptions, narratives, and practices."[32]

The participatory archives model calls for archivists to be more active in their roles and responsibilities, to take initiative, and to be "engaged with the interpretation of their collections rather than neutral custodians, and serve as effective advocates for their archival program and their profession."[33] Via this model, termed "the Archive 2.0 model" by Theimer, archivists can bridge the physical distances between archives and users, and help offset the disintermediating effects of mobile-web-based resource discovery by actively engaging with users through social media and by structuring their mobile interfaces to better anticipate and meet mobile-based users' needs.[34]

A number of scholars have shown that archives have been slow to respond to the task of establishing an effective digital presence, and have tended to apply a "print paradigm of archival finding" towards the search process, assuming that it will "translate into the digital age with relatively little modification."[35] If they are to remain competitive and relevant, archives must understand the ways in which mobile devices can help users partake in the resource discovery process. They must tailor their resources and structure

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[32] Mary Flanagan and Peter Carini, "How Games Can Help Us Access and Understand Archival Images," *The American Archivist* 75 (Fall/Winter 2012): 514–537.
[33] Theimer, "What is the Meaning of Archives 2.0?," 60.
[34] Ibid.
[35] Anderson, "Are You Being Served?," 83.

their programming to reflect and cater to the emerging modes of access to their materials, so that as many users as possible are able to meet their research needs efficiently, intuitively, and effectively. If archives cannot evolve to meet the changing needs and habits of their mobile-device-based users, the consequences may include user alienation and loss of use and support. In addition, as Anderson has pointed out, users who search, locate, and access findings online do not have the benefit of being able to consult an archivist to guide them should they be unable to find what they need online, and are thus at more risk of not being able to locate archival material at all, or of "making inaccurate assumptions about collection contents, relevance, context, provenance, or related records."[36] When the potential societal losses are taken into account, in terms of lost research findings that could be beneficial to society, the need for archives to evolve with mobile-based users becomes especially evident.

Monitoring mobile-based use and access to gain knowledge about patterns of user behaviour is another participatory model strategy that archives could apply to refine the user experience for those accessing archives via mobile devices. Theimer states that measurement and assessment are essential tools in refining archives' websites, and are fundamentally "Archive 2.0" concepts.[37] By monitoring mobile-based use and adjusting services as needed, archivists can offer a more organic and user-friendly experience, which ultimately helps to retain existing users and bring in new users. Traditionally, analyzing the behaviours of users tended to be done through surveys or by physically monitoring use in a controlled environment. However, as Christopher Prom points out, this is no longer the case, and archivists can now benefit from web analytics tools to gain

[36] Ibid., 58.
[37] Theimer, "What is the Meaning of Archives 2.0?," 60.

a clearer picture of user behaviour. In his study, Prom employed web analytics to answer a number of questions, including which parts of the archive's website received the most traffic, how users end up on the site, which search terms are most popular, and how users navigate the site. This allowed him and his colleagues to adjust services as needed, harnessing the full potential of the site.[38]

Mobile Devices in the Reading Room

In terms of mobile use in the reading room, information studies scholars Unmil Karadkar and Ciaran B. Trace have presented one of the few studies done so far.[39] Based on archival policy reviews and interviews with archives administrators and users (in this case, humanities scholars), Karadkar and Trace presented some preliminary findings on how archives have accounted for mobile device use in the reading room and the corresponding effects on users. Karadkar and Trace state that "a crucial aspect of the information work of humanities scholars that is often overlooked are the information management strategies employed by scholars in order to capture, manage, track, collate, and cite the primary source documents in their research."[40] Their preliminary research suggests that archives allow varying levels of access to mobile devices in reading rooms, including "allowed," "conditional," and "disallowed." In addition, they briefly outline the

[38] Christopher Prom, "Using Web Analytics to Improve Online Access to Archival Resources, *The American Archivist* 74 (Spring/Summer 2011): 158–184.
[39] Unmil P. Karadkar and Ciaran B. Trace, "Device Policies in Archive Reading Rooms," *ASIST Conference Proceedings,* November 1–6, 2013, Montreal, Quebec, Canada.
[40] Ibid., "Device Policies."

need of archives to balance mobile device access with security concerns and with the need to provide a quiet working space. Finally, Karadkar and Trace's research suggests that archives are simply not as good as they think about clarifying their policies on the use of mobile devices such as laptops, cameras, and phones in the reading room. This is a practical, easily implemented, and relatively inexpensive improvement that archives can make to better service the users of mobile devices in archives.

Although clarifying policies on mobile use in reading rooms is fairly simple and inexpensive, many of the other abovementioned concrete solutions to the very tangible problems posed by increased mobile access to archives depend on availability of resources, namely, money and people—both of which are already lacking in most archives. Solutions for better servicing mobile-based users, such as mobile optimization, increased mobile access to archivists, and improved "back-end" services, may require restructuring of already constrained archival budgets. The reallocation of limited resources in ways that more effectively support archives' mobile-device-based usership has the potential to strengthen their significance and impact within broader society, both directly (through increased awareness and use) and indirectly (through the broader societal impact of successful research findings).

Emulating native digital environments also presents opportunities to enrich public programming in the reading room. There is at least one example of an archive using simulation to provide display or access copies of born-digital material and to simulate the contextual environment in which the records were born. The archives at Emory University seems to be one of the few that have attempted to simulate the contextual environment by presenting Salman Rushdie's papers via a desktop computer in which the

records are files laid out in the structures that Rushdie himself originally created for them.[41] In this way, they allow users to gain additional contextual information regarding the way Rushdie organized his thoughts and papers as they peruse his records in an organic and tactile way. This method of providing access to records can enrich the user's understanding of the records and their provenance.[42]

Monitoring, confronting, and responding to issues encountered by online users requires an open-minded approach on the part of archivists, who must be willing to try new ideas and adjust their approach as necessary. It also requires archivists to embrace a postcustodial paradigm and not only accept their own roles in the creation of records, but allow users to have a more participatory role. Approaches and responses to problems encountered by users must be founded in the recognition of the fundamental difference between user's resource discovery needs and archives' need to represent contextual relationships between records. Many archives are on the right track towards anticipating the needs of their online users and are striving to meet users' needs as best as they can through increased online and social media presence and by structuring their search, discovery, and access tools with the user in mind. Overall, however, despite the many advances made by archives to increase their online presence, and despite a "large investment in digital archives" in recent years, many archival digital projects have failed to "live up to the overarching expectation of 'access for all.'"[43] If archives are to remain

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[41] Emory Libraries & Information Technology, "Salman Rushdie Papers, Born Digital, Series 11: Born Digital Materials," https://findingaids.library.emory.edu/documents/rushdie1000/series11/, accessed August 2017.

[42] While it would be exciting and different to see an example of a mobile device that features a simulated creator environment being used in the archival reading room, akin to the simulated computer desktop setup at the Salman Rushdie archives at Emory University, the practical and technical difficulties of this task may outweigh its benefits.

[43] Andrea Johnson, "Users, Use, and Context," 145.

usable and relevant, they must find a way to anticipate and fulfill the needs of both existing and potential users, while embracing the transformation of knowledge creation in a digital age. They must take a proactive, rather than reactive, approach to finding solutions to issues commonly encountered by users of archival websites by employing digital and online technologies in both time-tested and innovative ways. Those archives that succeed in doing so will profoundly enhance the user experience to new levels, and ultimately, elevate the significant role of archives in society.

Enhanced User Engagement via Networked Mobile Devices

By harnessing the power of portability and networked infrastructures, mobile devices (especially smartphones, tablets, and newer immersive technologies such as virtual reality) have enormous potential to enhance user engagement with and understanding of archival records. The supportive technologies that networked mobile devices now come equipped with allow for new and creative applications and ways of accessing archival records. These supportive technologies include things like high-definition displays, global positioning systems (GPS), gyroscopes or accelerometers, biometric sensors, and scanning, reading, and even projection capabilities. Mobile, place-based learning involves the coupling of networked mobility, place, and the use of these technologies, most often via specialized open-source or proprietary apps, to create new and interesting ways of presenting place and engaging users with their environments. Place-based mobile learning tools have been a hot topic in the fields of information studies, library studies, museology, education, tourism, marketing, medicine, and countless others.[44] In the

[44] See, for example, Deborah Boyer, "From Internet to iPhone: Providing Mobile Geographic Access to Philadelphia's Historic Photographs and Other Special Collections," *Reference Librarian* 52:1 (2011): 47–

archival field, this topic has only recently began to see increased coverage. Here, I hope to keep the discussion moving forward by examining some current examples of mobile-based learning applications to discuss how they are being used to engage users, allow new ways of accessing and experiencing archival records, and expand archival outreach into the mobile realm.

There has been an explosion of augmented reality (AR) and context-aware apps in the mobile app marketplace. These apps overlay imagery onto live photographic or video inputs and present them on the mobile device screen, allowing users to see altered versions of their immediate environments. Moreover, these apps use the previously described supportive technologies, such as sensors, to incorporate context awareness, which allow them to respond to the movements and actions of the user and incorporate tactile and visual feedback. The immense success of AR social media apps such as Snapchat and gaming apps such as Pokémon GO or Ingress, are a testament to the idea that, when executed well, such apps can be interesting, fun, and even addictive for users. In Pokémon GO, players use tactile and virtual feedback to "catch" Pokémon that appear to exist in their real-life environment via augmented reality, with the goal to complete their "Pokédexes." Pokémon GO was launched in North America on July 6th, 2016, and had reached 100 million downloads in the Android Marketplace by August 8th, 2016.[45]

56; J. Messeter, "Place-specific Computing: A Place-centric Perspective for Digital Designs," *International Journal of Design* 3 (2009): 29-41; H.E. Pence, "Smartphones, Smart Objects, and Augmented Reality," *The Reference Librarian* 52 (2011): 136-145; and J. Stein, S. Ruston, and S.S. Fisher, "Location-based Mobile Storytelling," *International Journal of Technology and Human Interaction* 5 (2009): 41-50.

[45] Artyom Dogtiev, "Pokémon GO Revenue and Usage Statistics," *Business of Apps,* http://www.businessofapps.com/data/pokemon-go-statistics/, updated August 10, 2017, accessed October 15, 2017.

It is worthwhile to note here that the use of the term "app marketplace" does not necessarily denote that downloaded apps are paid for; indeed, many apps on the marketplace are free to download, while many also encourage in-game purchasing. However, "free" apps survive by harvesting, tracking, and selling huge amounts of user data that is generated as byproducts of user interactions with the app. Users agree to this collection via terms of service agreements upon install to their mobile device. This data is used predominantly for surveillance, user behaviour tracking, and targeted advertising.

In the cultural heritage sector, a plethora of AR-incorporative and context-aware apps have sprung up on the app marketplace. These include historical walking tour apps, which overlay archival imagery onto physical depictions of real places. Cocciolo and Rabina discuss examples of such apps, including the National September 11 Memorial and Museum mobile application, "Explore 9/11," and the Explore! Project "to augment student learning at the site of ancient Italian ruins."[46] Some of these apps, such as *Discover Moscow,* are unabashed copies of the incredibly popular Pokémon GO approach:

> "Moscovites and city guests will soon be able to 'catch' Russia's historic personalities and take a selfie with them, the city authorities say. They say an existing app is being updated, and it will work similar to Pokemon Go - a mobile game that blends the real world with computer graphics. The "Discover Moscow. Photo" app will be available in late August. Users will be hunting for 3D virtual doubles of Peter the Great, Alexander Pushkin and even Napoleon among others. Each personality will be placed somewhere in Moscow and geomarked, the Moscow authorities said in a statement (in Russian). They say that 'as soon as a user is within the 50-metre (164ft) radius to the required co-ordinate' he or she will be able to see and 'fix' a virtual double on camera. The authorities hope the updated app will help increase public interest in Moscow's rich cultural heritage and give users another reason to walk more in the capital.[47]

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[46] Anthony Cocciolo and Debbie Rabina, "Does Place Affect User Engagement and Understanding? Mobile Learner Perceptions on the Streets of New York," *Journal of Documentation* 69:1 (2013), 102.
[47] BBC News World, "Moscow Plans Pokemon Go-style App to "Catch" Historic Figures," BBC News, http://www.bbc.com/news/world-europe-36883613, accessed October 15, 2017.

One interesting aspect of AR mobile apps is that they tend to attract young audiences. Millennials were the prominent early adopters of Pokémon GO, accounting for 55% of downloads.[48] This suggests that similar uses of such apps by archives has the potential to attract and engage new demographics of users and expose them to the work and uses of archives. This is an area that needs further examination from an archival public programming angle.

Some of the preliminary research on the impact of mobile walking tour apps on the cultural heritage sector (specifically, LAMS: libraries, archives, and museums) was been presented by Amber Cushing and Benjamin Cowan in the Proceedings of the Association for Information Science and Technology conference in 2016. Cushing and Cowan note that little research has been done on apps specifically created to enhance LAM user experience, and that existing studies of such applications have judged their success on pre-existing outreach impact rubrics. They state that "while these impacts are a starting point, one cannot assume that they are the best or only method to assess impact of a mobile app for the cultural heritage sector."[49] Cushing and Cowan's early research suggests that "geo-location and the ability to compare between archival image and modern day add significant value to the users' cultural heritage experience."[50] Anthony Cocciolo and Debbie Rabina likewise have shown that place-based learning can enhance user engagement and understanding of historical topics and that it "provides a meaningful entry point into historical content."[51] Location-based, mobile-device-enabled learning is

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[48] Artyom Dogtiev, accessed October 15, 2017.
[49] Amber L. Cushing and Benjamin R. Cowan, "Walk1916: Exploring How a Mobile Walking Tour App can Provide Value for LAMS," Proceedings, ASIST 2016, October 14–18, 2016, Copenhagen, Denmark.
50 Ibid.
51 Cocciolo and Rabina, 98.

gaining slow but steady ground in the LAM field, as evidenced by the "DesignLab: Create Your Own Location-Based Mobile Experience" workshop offered at the Minnesota Historical Society.[52]

It is clear based on the preliminary research that mobile devices allow truly innovative ways of accessing and engaging with archives and with archival records. They also offer the potential to expand archives' outreach past prevailing users such as historians and genealogists and to draw in new demographics and new, sometimes unlikely users. As such, internet-connected mobile devices, and all of their supportive technologies and networked infrastructures, make them a key site for the profession to enact and embody a more inclusive archive. Indeed, in an era where mobile devices are able to predict what we want and offer it to us before we might even know we want it, one could muse that archives stand to gain from mirroring networked mobile devices by responding adaptively and organically to the needs of mobile-based users of archives.

[52] DesignLab, "Create Your Own Location-Based Mobile Experience," as advertised via email, November 10, 2014.

Conclusion

We live in the world of ubiquitous computing predicted by Mark Weiser in the 1980s. Ownership of network-connected mobile devices is increasing globally. Now, vast numbers of people carry a smartphone everywhere they go, and continuous and instant access to new and immersive, contextually-aware, responsive and interactive mobile computers is becoming a norm. People rely on their mobile devices for all kinds of activities, from personal organization, to building social relationships, to documenting events big and small. The widespread global use of such devices, and rising availability of network connectivity, means that now more than ever, communication is being democratized.

Given the pervasiveness of mobile devices in our environments, it follows that they are increasingly being used as a primary mode of archival records creation, especially for individuals creating personal records. These shift in the mode of communication should be adequately reflected in archival holdings and archivists' approaches to their craft. Yet, despite the enormous impacts of these technologies on almost all aspects of the field, and with a few exceptions, this topic has received almost no attention from archival scholars. The potential impacts that exist at the nexus of networked mobile devices and archivy are far-reaching, have lateral effects, and demand more attention from the field. Networked mobile devices have impacts on each of the core archival functions, from acquisition, appraisal, and description, to preservation, access, and public programming.

The ability of mobile devices to open up space in historical and archival records for people and histories that have traditionally been omitted or erased from the record is of particular interest to archivists seeking to embrace the postmodern paradigm in archives. These paradigms call attention to people and experiences from infinite points of view and make room for marginalized voices. Although it makes archival theory and practice more challenging, postmodernism also offers immense potential to enrich the record.

Grounded in the postmodern tradition and in the wider context of the current digital environment, this research project has sought to address the dearth of archival scholarship on the impact of mobile devices on records creators, archivists, and end users of archives. It has found that mobile devices pose unique challenges and opportunities across all aspects of the field. One reason for this is that mobility, as applied to records, is difficult to make sense of. It requires archivists to delineate and define records that are ever-evolving and fluid. It also offers particularly complex challenges from a technical angle; the multiplicity of formats both open and closed, the infinite types of mobile devices, and issues related to digital preservation mean that archivists may be shying away from embracing born-mobile records as a valuable source of archival records.

Archiving of born-mobile records also demands that archivists make space, conceptually and practically, for born-mobile records. This may mean adjusting entrenched and positivist notions of authenticity, "recordness," and ephemerality as they apply to archival records. While it may seem like an insurmountable task to embrace a new mode of records creation, with all its intricacies and complexities, archives and their users stand to gain much from doing so.

In particular, this thesis has been a call to the field to make room for the records of everyday actors in their holdings. For too long, archiving has reflected histories of the dominant forces in society: institutions, governments both open and oppressive, corporations, and the rich and powerful, while the stories of marginalized populations have taken a second seat. The need for unheard voices to make themselves heard has been so profound that a new form of archiving has emerged, based in grassroots, community, activist archiving. As archivist Sarah Ramsden has shown, "community archives have developed in response to gaps in the documentary record and the real and perceived limitations of state-funded archives. These communities, whether defined by location, shared identity, or common interests, recognize the vital role of records in building collective memory and the importance of having access to their history."[1]

Although archives are very much bound by their mandates, and institutional archives especially so, if they wish to be more representative and inclusive, room in archives must be made for the stories of the less-dominant forces in society. Private archives, especially, are called to embrace born-mobile records. Ignoring this call means that we could be losing records of immeasurable and enduring value.

Organizing the types of non-institutional records that might emerge out of mobile device usage into an heuristic can provide a better understanding of the kinds of records we may be leaving out by neglecting this mode of creation. Networked mobile devices are used to create records that fulfill three main areas of human activity: organizational functions, social and cultural functions, and citizenship functions. Furthermore, via all of these functions, mobile devices are a primary site of cultural work. By reflecting the

[1] Sarah Ramsden, "Defining 'Community' in Models of Community Archives: Navigating the Politics of Representation as Archival Professionals," (MA Thesis, University of Manitoba, 2016), ii.

needs of society, they recursively recreate and reinforce these needs, further entrenching their role in society. The role of mobile devices and network connectivity in culture-building offers a critical place from which to study social and cultural trends, systems of power and communication, and human relationships, needs, and desires. All of these functions of human activity can and should be represented in archives so that future generations of historians and students can learn about our lives today.

This research project found that internet-connected mobile devices offer unique challenges and opportunities from the public programming side of archives. Although networked mobile devices have been pervasive now for over a decade, there have been no usability studies done to account for their presence in the archival resource discovery process. The challenges and opportunities of mobile computing technologies on the search, discovery, and access stages of archiving in many ways seem to echo those facing digital archiving in general, but more research needs to be done on this topic.

Finally, in terms of outreach, there is immense potential for networked mobile devices to engage existing users and draw new demographics of users, particularly youth. Technologies native to mobile formats, such as immersive, interactive, context-aware and augmented reality applications make it possible for users to interact and engage with archival resources in new and exciting ways.

Because this thesis was an attempt to address the gap in archival literature on the intersections of mobile records and archivy, its approach was very broad. More research needs to be done across virtually all aspects of networked mobile devices and the creators, archivists, and users of born-digital records identified in this thesis.

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