

The Second Wave: The Impact of Digital and Open Practices on Faculty Scholarship in Higher Education

by

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University of Victoria



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Abstract

One of the noblest duties of the university is to enable and encourage “intellectual endeavour, valuing scholarship for its own worth and fostering a collaborative spirit in the furtherance of society” (Enabling Open Scholarship, 2016). The advent of the World Wide Web and ancillary advancements in technology have not only opened up scholarship for greater access, but created a transformation in the scholarly practice. The challenges faculty experienced in adopting new practices were examined and whether they straddled all domains of scholarly practice (e.g., research, teaching, and service), how universities measured impact and quality in this new publishing landscape, and what benchmarks existed for evaluating these forms of non-traditional scholarship.

In this study, a phenomenographical approach was employed to understand the impact open scholarship practices have had on academic scholars employed at a university in Western Canada. An embedded triangulation mixed methods design approach was used for this multiphase study to obtain different but complementary data on the lived realities of scholars at the University. Phase 1 included a survey using an explanatory sequential design. After the data collection and analysis were completed, individual in-person semi-structured interviews were conducted. Phase 2 of the study included the analysis of a selection of primary university documents related to tenure and promotion. Finally, a joint analysis approach was used to present the findings from the mixed methods study (i.e., quantitative and qualitative studies). Six themes emerged from the study that highlighted ways participants conducted research (access to research and tools used), their adoption of open intentions and initiatives and use of social media platforms and social networks, accountability and transparency of university policies and guidelines, types of research outputs produced, and criteria for faculty evaluation. Based on the implications from these findings, five recommendations were offered for enacting change: establish administrative accountability, make all tenure and promotion documents openly accessible, broadly

define scholarship, broaden the scope of impact, and develop a values-based framework model for assessment.

Keywords: open scholarship, digital scholarship, higher education, scholarly publishing, scholarly communication, research dissemination, scholarly outputs, evaluation policy, tenure and promotion, open education, open access

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Dedication

To my father,

Nallathamby Ponnudurai (1927-2003)

and

To my mother,

Sivaluckumy Ponnudurai (1933-2017)

Chapter 1:

Introduction

It is one of the noblest duties of a university to advance knowledge and to diffuse it, not merely among those who can attend the daily lectures—but far and wide.

—Daniel Coit Gilman, First President, Johns Hopkins University, 1878

(as cited in Johns Hopkins University, 2020, p. 24)

A Historical Perspective of Scholarship

Daniel Gilman’s often quoted statement (Johns Hopkins University, 2020), at the launch of the Johns Hopkins University Press, succinctly encapsulated the traditional values of the academy whose collective commitment was focused on “enabling and encouraging intellectual endeavour, valuing scholarship for its own worth and fostering a collaborative spirit in the furtherance of society” (Enabling Open Scholarship, 2016, para. 1)—values that endure to the present day. Where did this incentive to disseminate scholarly knowledge begin? At the dawn of the second millennium, monastic scribes translated Greek, Roman, and Egyptian parchment, and sourced knowledge systems, thus preserving the surviving ethos of textually based epistemologies. This act of macro-preservation was at once a cultural/intellectual restoration and the foundational predicate for the potential distribution of large scaling knowledge systems centuries in the future. As competence and trust in this form of restoration and communication grew, we saw the growth in increasing quantities of manuscripts and illuminated manuscripts production around the 12th century (Briggs & Burke, 2005).

While printing presses existed in East Asia, circa 1234, and screw presses were available in Europe by the 15th century, these innovations had very little broad-based impact until approximately

1450 when Johann Gutenberg invented a printing press with movable type (Briggs & Burke, 2005). He created a printing system that could mass-produce books and other documents of high quality at relatively low prices. This innovation represented the first info-wave expansionism in the dissemination of religious, technical, scholarly, and general knowledge texts. Binkley (1935) reasoned that printing presses, by the means of mass production, brought greater access to scholarly material to the broad population (professionals, amateur scholars, and the moderately wealthy), which were previously only available in monasteries and private libraries. From this greater access to scholarship, we saw a cultural shift in the flood of books and journals published in a growing number of specializations and across disciplines. The phenomena caused an increase in the literacy and education levels of the people, changing the religious, social, and cultural landscape (Briggs & Burke, 2005). Binkley (1935) observed that these “series of changes [were] more revolutionary in their possible impact upon culture than the invention of printing” (p. 519).

From the invention of the printing press and its development through the 15th century sprung the *learned journal*—the brainchild of learned societies. Established during the late 17th and 18th centuries in Europe and the Americas, learned societies promoted the establishment of permanent literary and scientific academies that published scholarly journals, enabling the publication of findings from their research inquiries and scientific discoveries (van Miert, 2016). These academies, “sponsored by centralized monarchies, who hoped to profit from the results of the rapidly transforming and increasing research into the natural world” (p. 275), were shaped after a community of scholars and literary figures in the 16th and 17th centuries, known as the Republic of Letters/*Respublica literaria*. They shared information about works-in-progress and published books and other matters of interest through letters (Larivière et al., 2015; van Miert, 2016). Each society launched its own journal, “often called ‘Transactions’ or ‘Proceedings,’ were published at regular intervals ... were multi-disciplinary in nature, [and] encouraged scholars in different disciplines to understand each other’s scholarly research

outcomes” (United Nations Educational Scientific and Cultural Organization, 2015, pp. 6-7). *The Journal des Sçavans*, created in France in 1665 by Denys de Sallo, and *The Philosophical Transactions of the Royal Society*, created later in the same year by Henry Oldenburg for the Royal Society of London, were two of the earliest scholarly journals published in Europe. Similarly, the *American Journal of Science*, founded in 1818, was the earliest scientific journal published in the United States, while *The Asiatick Researches or Transactions of the Society Instituted in Bengal, for Inquiring into the History and Antiquities, the Arts, Sciences, and Literature of Asia* was the earliest scholarly journal published in the global South in 1788 (Jinha, 2012; United Nations Educational Scientific and Cultural Organization, 2015).

In creating the *Philosophical Transactions*, Oldenburg solved a number of issues facing early scientists, namely, the desire to establish precedence and acknowledgment in print, and in the discovery of a phenomena or findings. As an independent, periodical publication, the Council of the Royal Society reviewed the submissions, recorded the name of the authors, the date authors submitted their manuscripts, and recorded their discoveries. Through the 18th and 19th centuries, however, there was a movement away from the production of learned journals to the creation of more specialized journals “reflecting the fragmentation of knowledge into more specific disciplines.... By the end of the nineteenth century, features like the peer-review of submitted papers had begun to become standard in many disciplines” (Shearer & Birdsall, 2002, p. 2).

Peer review involves “the systematic, critical review of a submitted paper by two or more scholars from the same academic community as the author” (Mabe, 2010, pp. 139-140)—it is a formal mechanism employed by publishers of scholarly content for judging the quality of reported research, and a process that is widely accepted by scholars and university administrators. Beginning in approximately CE 100 we saw a form of peer review with the redaction of biblical texts that were “‘worked on’ by a form of ‘copyist’ review process” (Spier, 2002, p. 357). Al-Mousawi (2020) and Spier

suggest that the first documented description of a peer review process appears in a book entitled the *Ethics of the Physician* by Ishap bin Ali Al Rahwi, which states that “it is the duty of a visiting physician to make duplicate notes of the condition of the patient on each visit... The notes of the physician were examined by a local council of physicians, who would adjudicate as to whether the physician had performed according to the standards that then prevailed” (Al-Mousawi, para. 5).

Baldwin (2020), a historian of science, states that pre-publication reviews were a common occurrence at scientific societies (i.e., Académie des Sciences in Paris, the Edinburgh Medical Society, and the Royal Society of London) in the 1800s. Submissions were distributed to its “members most versed in these matters” and whose identity was not known to the author. These *internal reviews* were meant to “ensure that anything issued with the society’s name on it did credit to the society” (p. 3). It is only after the Second World War that the idea about referees and their purpose started to take root. The increase in the number of journals and scientific papers prompted the process of sending papers to outside experts. Baldwin argues that the birth of systemic external reviewing occurred after the academic journal became the “dominant form of scientific communication” in the late nineteenth and early twentieth centuries (pp. 4-5). This foundational cultural shift (i.e., the referee becoming the gatekeeper responsible for the quality of the literature) changed how scholarship became entrenched within higher education institutions.

According to Czerniewicz (2013), the traditional research scholarship cycle contained core phases—with slight variations—that were distinguishable across disciplines: 1) conceptualization 2) data collection and analysis and the 3) reporting/dissemination of findings (pp. 12-13). In most cases, the authoring scholars completed the first two phases in private, while the publishers were responsible for disseminating the outputs of the research. An author writing an article within this traditional research lifecycle submitted their paper to one of the many scholarly communications distribution channels. Figure 1.1 describes the types of traditional scholarly publishing channels (e.g., journals, books and book

chapters, conferences, working and technical papers, patents, and theses and dissertations) that scholars in all disciplines still consider regularly.

These traditional publication channels included established mechanisms for peer-review conducted by qualified members (on a volunteer basis) of the profession, to ensure that the scholarly output met accepted standards of quality, validity, originality, and ethics required within the discipline of the work under consideration. In addition, publication in a peer-reviewed scholarly journal ensured credibility that was marked by the quality brand assurance of publishers, with accessibility and outreach potential for all disciplinary fields. Though the same held true for publications in scholarly journals within the arts, humanities, and the social sciences, books still dominated and had a greater impact within this community of scholars (Mabe, 2010). Books took a longer time to create and according to Mabe, the “rapid pace of modern scholarship, as well as the desire to focus on very specific topics ... shorter treatments become preferred” (p. 138), even in the latter disciplinary areas.

Regardless of the choice of output format (i.e., books or journal publications), the goal after publication is to inform colleagues of the publication and have it “read widely by providing access or sharing a copy” (Dylla, 2016, para. 2)—a practice that has existed since the publication of the first journal. Czerniewicz (2013) asserts that in this traditional model it is “rare for the actual research processes to be shared either within a community, or publicly” and the audiences tend “to be quite clear cut, and narrowly aimed. It is fairly difficult for ... non-university based communities who do not have access to university library resources” (p. 13) to get access to this content. Moreover, within this scholarly publishing cycle any scholarly outputs disseminated by scholars themselves are generally not classified under *research* but instead under *service* for tenure and promotion purposes.

Figure 1.1*Traditional Scholarly Communication Channels*

After World War II, there was a proliferation of publicly funded scholarly research from economically developed nations—an expansion that did not, however, see a corresponding goal of diffusing scholarship far and wide (United Nations Educational Scientific and Cultural Organization, 2015; Willinsky, 2006). Instead, Gilman’s commendable goal of access to knowledge (Johns Hopkins University, 2020) fell by the wayside, as access to scholarly outputs moved away from the stewardship of non-profit learned societies and research councils and further behind closed access barriers (i.e., subscriptions and high prices) set by the top five prolific academic publishers, (i.e., Reed-Elsevier, Springer, Wiley-Blackwell, Taylor & Francis, and SAGE). Not only do these for-profit academic publishers hold the largest market share (between 28-39% and 50% of the published articles) in the Science, Technology, and Medicine disciplines, they are also charging high subscription fees and article processing charges (APCs)

to subsidize the cost of making an article openly accessible upon publication (Butler et al., 2023; Larivière et al., 2015, pp. 1, 10). Bosch and Henderson (2016) assert that print, online, and big-deal packages for journals normally see price increases of 5% to 6% annually (pp. 32, 36). The authors contend that the scholarly journals market will continue to see price increases due to the following driving forces:

increased research outputs, budget compression, price inflation, the need to fund new research and education directions, open access, government mandates, new assessment and evaluation tools, and changing patterns of the distribution of information offered by research platforms and social networking. (p. 38)

Table 1.1 shows a comparison between the average price of online journals by discipline indexed in Clarivate Analytics Indexes from 2019 (USD\$1457) to 2021 (USD\$1575); An 8% price increase over two years indicating the ideal of the *public good* is greatly diminished and compromised for the benefit of commercial interests (Bosch et al., 2021). In addition, the proliferation of information sources—more than 100,000 journals published by more than 5,000 academic publishers (United Nations Educational Scientific and Cultural Organization, 2015, p. 24)—impedes the time taken towards final publication (i.e., working through the process of submission, acceptance, peer-review, and final publication). In some cases, it takes two to three years before a scholarly paper is published in print and/or online.

Table 1.1

Average Cost Price Comparison for Online Journals in the Clarivate Analytics Indexes from 2019-2021

Discipline	Average price per title		Discipline	Average price per title	
	2019	2021		2019	2021
Agriculture	\$1,251	\$1,360	Anthropology	\$544	\$603
Arts & Architecture	\$437	\$480	Astronomy	\$1,959	\$2,104
Biology	\$2,890	\$3,131	Botany	\$2,215	\$2,346
Business & Economics	\$1,840	\$1,995	Chemistry	\$5,393	\$5,815
Education	\$1,086	\$1,218	Engineering	\$2,473	\$2,675
Food Science	\$2,702	\$2,923	General Science	\$1,412	\$1,508
General Works	\$247	\$266	Geography	\$1,527	\$1,682
Geology	\$1,391	\$1,473	Health Sciences	\$1,926	\$2,059
History	\$286	\$530	Language & Literature	\$391	\$434
Law	\$474	\$504	Library Science	\$650	\$704
Math & Computer Science	\$1,691	\$1,802	Military & Naval Science	\$1,120	\$1,215
Music	\$329	\$359	Philosophy & Religion	\$424	\$457
Physics	\$4,076	\$4,402	Political Science	\$869	\$948
Psychology	\$1,023	\$1,112	Recreation	\$888	\$942
Social Sciences	\$950	\$1,044	Sociology	\$1,006	\$1,111
Technology	\$2,372	\$2,563	Zoology	\$2,583	\$2,691
			TOTAL AVERAGE COST	\$1,457	\$1,575
					8 % change between 2019-2021

Note. Data from “The new abnormal: Periodicals price survey 2021,” by S. Bosch, B. Albee, and S. Romaine, *Library Journal*, 2021.

Impact of the Internet on Scholarship

The advent of the World Wide Web (internet) and ancillary advancements in technology from about 1994 onwards steadily changed the research landscape and scholarly practices in many ways. It created a second, major wave of change in the way scholarship is disseminated. These innovations not only open up scholarship for greater access to the public and increase the diversity of delivery channels

used by scholars to disseminate their research but creates a transformation in the nature and culture of scholarly practice, for some, towards one with an *intent to openness*. Contemporary scholars utilize a variety of media venues or platforms (independent of the formal *publisher driven* distribution channels) such as blogs, YouTube, podcasts, social networks, LinkedIn, Wikipedia, online scholarly editions, video and audio streaming, visualizations, simulations, etc.—all comprising new forms of digital scholarly outputs and informal research dissemination streams or channels. Literary scholar and technology philosopher McLuhan et al., (1967) describe this cultural shift in scholarly practice as

[t]he medium, or process, of our time — electric technology — is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing us to reconsider and re-evaluate practically every thought, every action, and every institution formerly taken for granted. Everything is changing: you, your family, your education, your neighborhood, your job, your government, your relation to others. And they're changing dramatically. (p. 8)

According to McLuhan et al. the content delivered over this new *electrified* medium creates a unique environment—one that has not only reprocessed the old one, just as the Gutenberg press reprocessed the manuscript, but where new technologies and their environments supplant each other very quickly (p. 13) . It was this technological *disruption as revolution* that created a second major wave of change in scholarly practice and publishing that we are currently experiencing—a phenomena called *open scholarship* that is akin to the Gutenberg revolution which triggered a massive cultural change—transforming the way research was read, conducted, and disseminated. The publicly accessible internet has produced a multitude of technologies (tools) and environments (social/mediating networks) to create, communicate with others, as well as disseminate scholarly research and teaching outputs categorically and exponentially. The creation of online tools for use in the scholarly ecosystem (commercial and non-commercial, or with open source/access licenses) began in 1989 with the

invention of the World Wide Web by Tim Berners-Lee. It went public in 1991 and has grown exponentially since then (from blogs, RSS feeds to websites, social networking tools, Facebook, and photo, videos, and photo sharing sites).

More importantly, the online tools and networks that have been developed since demonstrate the disruptions occurring in the scholarly landscape by capturing some types of content that would have previously been published behind publishers' paywalls or subscriptions and are instead published on publicly accessible sites (i.e., open and networked)—places that have not been vetted as traditionally established (i.e., quality assurance and credibility) scholarly peer-reviewed venues. The boundaries where scholars publish and when they make notifications of their scholarship have blurred and constitute a substantial change in current scholarly practices—and in some disciplines (e.g., digital humanities), quite dramatically.

What changed is the manner in which publications are created, shared, and disseminated. In the print age, Dylla (2016) points out that authors receive or purchase extra copies of their articles for distribution to colleagues or collaborators; and readers who want a personal copy acquire them through collections purchased by their university library. In the digital age, however, the internet and the availability of a multitude of technology enabled distribution channels has propelled scholars' practices substantially—they not only offer convenience and structured options for sharing with colleagues and potential collaborators, but also a wider audience of readers. These new practices—for example, attending online conferences, using discussion groups, distributing preprints, testing of theories or drafts of publications online, networking through social networking sites—constitute informal methods that scholars use to find out about new trends or publications in their disciplines, and connect with others who have similar interests. Effectively, informational notification, vetting, and analytical testing are done in *real time* posting and processing of data as content. Notably, content from published work (i.e., in traditional, established channels of record like peer-reviewed journals or books) may have

previously appeared on one of these distribution channels informally. In addition, over the last two decades, specifically in the humanities for example, some scholars have moved beyond the *lone scholar* model (Bonn, 2017, p. 206) and shifted towards a collaborative digital scholarship model for scholarly creation, development, and dissemination.

We should be careful, however, in attributing this second wave of change or shift in open scholarly practices and intentions solely to technology. Scholarly information and practices did not develop in a vacuum. It can be argued that social, economic, and political (including international laws, *open* policies/mandates/statements, taxpayer funded research mandates, etc.) trends alongside technological advances, have aided in moving more scholars towards adopting open intentions in scholarly practice. It is also important to note the way that new technologies are used to deliver content is what determines their value, invariably threatening some older practices, yet manifestly enhancing scholarly practices in practical, and at times, unpredictable ways. Veletsianos asserts that “technological innovations have the capacity to lead to fundamental rethinking of how scholarship is done, [and] this rethinking may not occur in anticipated ways” (2016, p. 14). Advances in technology are in a constant state of flux and no one single approach or tool will fit any one discipline but considered as options in an a la carte menu that one can choose from depending on the context or purpose.

The arrival of these new forms of scholarly communication channels and digital tools have not, however, dislodged the older and more traditional dissemination channels and tools used by scholars. Instead, they co-exist and enrich the existing system of publication channels. After all, did the old media of oral and manuscript communication not co-exist and interact with the print medium, just as it in turn co-existed with television and the internet? The American political scientist Lasswell (1948) describes his communication model in terms of Who (author) says What (content) to Whom (audience), in Which Channel (media), and to What effect (p. 117). What remains important is that 1) the message should be considered in the context in which it is communicated and 2) one medium of communication should not

have a monopoly on how knowledge is disseminated (Briggs & Burke, 2005, pp. 5, 10, 56). These tools and networks provide a way for research and teaching outputs/objects to move nimbly between scholars and the discerning public wanting to read, add, reuse, and comment. In fact, new digital tools provide scholars with affordances to shape the possibilities of new practices—where new technologies co-construct new practices (Czerniewicz, 2013, p. 4). In academia, we need to not only acknowledge the existence of these new and complementary, online scholarly communication channels, but also consider their use in advancing the university’s mandate, and in so doing, recognize the efforts made by scholars within academic procedures for faculty tenure and promotion evaluations. Indeed, according to Scanlon (2018) we can “reshape how universities communicate their research through inventive, open, accessible methods that engage a far broader and more diverse public” (cited in Arthur et al., 2021, p. 795).

Defining Scholarship and Open Scholarship in Higher Education

Before examining the subtle nuances of how scholars are defining themselves in this new electrified environment, we need to take a step back to consider what constitutes scholarship in academia. In contemplating what it means to be a scholar, Boyer (1990) asserts that scholarship should include the full scope of academic work. For Boyer, scholarship not only means “engaging in original research,” but “looking for connections, building bridges between theory and practice, and communicating one’s knowledge effectively to students” (p. 16). He frames scholarship into four separate, but overlapping, functions:

- scholarship of discovery (i.e., research to advance knowledge),
- scholarship of integration (i.e., making connections across disciplines/topics and time, synthesizing and “forcing new topologies of knowledge”),

- scholarship of application (i.e., to apply knowledge responsibly to problems that occur in the larger community, a category that is usually called *service*), and
- scholarship of teaching (i.e., educating and enticing future scholars about your research).

In 1996, Boyer expanded his earlier definition of scholarship to include the “scholarship of engagement”—where institutions of higher education are partners with practitioners in search of answers for a nation’s “most pressing social, civic, economic, and moral problems” (p. 11). These activities are part of a “broader movement to develop new and productive connections between the university and its publics” (Bridger & Alter, p. 164)—an environment in which new knowledge is created “in its application in the field, therefore benefitting the teaching and research mission of the university” (Yapa, 2006, p. 73) with an emphasis on mutually beneficial relationships, and to serve the “public good, whether not-for-profit, industry, or government” (Liddle, 2023, para. 3). All these facets of scholarly activities constitute a part of a scholar’s identity.

Others attempted to expand Boyer’s definition by including additional areas of scholarly activity, namely professional activity, research publications, artistic endeavours, engagement with the novel, community service, collaboration, pedagogy, and scholarly information activities, such as discovering, annotating, comparing, referring, illustrating, etc. (Palmer et al., 2009; Pellino et al., 1984). Building on Boyer’s foundational discourse, open scholarship offers universities a way to realign their “overall mission toward one of ‘engaged inclusive knowledge societies’ providing unrestricted access, use, modification, and adaptation of research outputs as widely as possible for the benefit of all” (Arthur et al., 2021, p. 796). Technological innovations have changed the way in which scholars now create and disseminate their scholarship, and how they define what constitutes scholarship. The debate to define scholarship will continue as channels for scholarly outputs continue to evolve. Although the goals for

scholarly dissemination remain the same, changes in scholarly intentions and practice bring with it challenges for evaluation and reach towards new audiences (Rumsey, 2011).

Defining Open Scholars

In considering these technological disruptions and subsequent adoption by scholars, cultural shifts in adopting open intentions, as well as the push from funding agencies and higher education institutions, how do scholars who practice (write, think, and share) in this new scholarly ecosystem define themselves? Broadly defined, scholarly communication is a “system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use” (ACRL Scholarly Communication Committee, 2003, para. 1). This ecosystem includes both formal means of communication, (e.g., publication in peer-reviewed journals) and informal academic scholarship (including new digital forms expressed on online platforms like blogs, YouTube, video books, LinkedIn, Scholarly Editions, Twitter, the use of tools for textual analysis, geospatial mapping, as well as the manner in which scholars engage with communities external to their institutions). Having established what constitutes scholarship and scholarly communication, how scholars view their activities around research, teaching, and service in this technologically enhanced, scholarly landscape is described below.

Scholars who work within this scholarly communication ecosystem may define themselves as digital scholars, networked scholars, social scholars, public scholars, and/or open scholars. Others may be aware of these defining roles but practice across these distinctions. The definition for digital scholarship has evolved to include the “use of digital evidence and method, digital authoring, digital publishing, digital curation and preservation, and digital use and reuse of scholarship” (Rumsey, 2011) to achieve scholarly goals. Mandell (2012) believes that digital scholarship can encompass scholarship that uses both digital media and research on digital media.

On the other hand, scholars who make use of “participatory technologies and online social networks to share, improve, validate, and further their scholarship engage in networked scholarship ... [and] were described as networked scholars” (Veletsianos, 2016, p. 2). It is a scholarly practice associated with the concept of openness and shaped by “social cultural, economic, and political factors” (Veletsianos, 2016, p. 11). Meanwhile, Cohen (2007) describes social scholarship as an “open process that utilizes Web 2.0 tools to foster the sharing of research interests and publications” (p. vi). Scholars who engage in this sphere, Cohen claims, “employ collaborative tools to publish, ruminate about, comment on, annotate, store, tag, bookmark, and rate content related to their research” (p. vi). Social scholars actively create and publish content online while using the technologies to assist in research workflows. There are similarities between networked and social scholars—they are scholars who engage with networked technologies and interact with other scholars in social networks.

A simple definition of an open scholar is someone “who employs digital, networked and open approaches to demonstrate specialism in a field,” (Weller, 2011, p. 4) and the first two are necessary conditions to bring about open practices (p. 136). By its very nature, open scholarship is rarely ever *singular* or *done*, and may require collaboration with multiple co-dependencies, and completion timelines that have multiple phases/cycles. The traditional notion of authorship will have to be re-imagined in this digital environment. For example, Nowvskie (2011) contends that an attribute underlying collaborative scholarship is that it requires a “closer partnership ... among individual scholars and the technologists, student and postdoctoral researchers, content creators, designers, faculty colleagues, archivists, and cultural heritage professionals who work collectively to generate, assemble, disseminate, and preserve new knowledge and new scholarly interpretations” (p. 169). According to Bartanen (2014), open scholarship also crosses customary boundaries of teaching, scholarship, and service. In this scenario, the processes used to develop new knowledge correspond equally in importance to the scholarly output(s) produced (para. 3). Another important aspect of open scholarship

is the effort to establish digital media outputs as a credible, professional, and legitimate means for scholarly communication.

Knowledge Exchange (2017) defines open scholarship broadly as “opening up the way research is carried out and communicated,” and explicitly includes “decision-making processes, within research, alongside progress towards greater access to the outputs of more traditional research processes” (2017, August, p. 8). For the purposes of this study, however, I will be applying the definition of open scholarship, proposed by Veletsianos (2016) which focuses on “the wide and broad dissemination of scholarship by a variety of interconnected means (e.g., technology, licensing) aiming to broaden knowledge and reduce barriers to access to knowledge and information” (Veletsianos, 2016, p. 16). Veletsianos and Kimmons (2012b) referred to these types of scholarly practices as open scholarship and the “scholars who participate in such practices as being part of the open scholarship movement” (p. 167). In this scenario, scholarly content could be seen “as the manifestation of knowledge as a commons, that is, a resource shared by a group of people, ... underpinned by equity, efficiency and sustainability” (Czerniewicz, 2013, p. 11). The Association of Research Libraries (n.d.) includes open access, open data, open educational resources, and all other forms of openness in its definition. Figure 1.2 provides a visual representation of the open scholarship (described as open science in Europe) ecosystem, a digital landscape that includes the concepts of open access, open data, open education, open government, open licenses, open science, and more. Open, within this spectrum of scholarly activity, as defined by Open Knowledge International (n.d.), refers to the principle of openness in relation to data and content—in an environment where there is respect for knowledge, a robust commons in which anyone could participate, and interoperability is maximized.

Figure 1.2

The Open Scholarship Ecosystem

Note. Adapted from “The components of open science,” UNESCO, 2020. Photo credit (cover). Reprinted in “Toward a UNESCO recommendation on open science: Canadian perspectives,” by Ellen Chan, Dick Bourgeois-Doyle, Michael Donaldson, and Eleanor Haine-Bennet, by Canadian Commission for UNESCO.

Problem Statement

At most research focused universities, faculty members are evaluated on three standard criteria: research, teaching, and service with a typical breakdown of 40%, 40%, and 20% respectively. These areas are the *tripod* (Andersen, 2004, p. 4) upon which tenure and promotion rests. Over the years, emphasis has shifted from teaching to service and back to research—reflecting the shifting priorities within the academy and beyond (Boyer, 1990, p. xi). After World War II, research and publication became the primary means by which faculty are evaluated and receive academic standing, and tenure and promotion committees traditionally evaluate scholarly publishing in terms of journal impact factors

and citation counts (Goodyear et al., 2009; McKiernan et al., 2019). Over time, not much has changed in the evaluation of faculty for tenure and promotion:

- 1) Faculty put together a portfolio including their resumes, statements about their research programs and philosophies of teaching, as well as their service to the department, university, and the profession;
- 2) Letters of recommendation are then solicited for inclusion; and
- 3) Tenure and promotion committees review portfolios, make recommendations on behalf of the department to the next level of university review. (Andersen, 2004; Weller, 2011)

Technological advances have allowed scholars to participate in online environments, with the result of expanding their scope of influence and expanding the reach for their research in the world. Open scholarship involves “an expansion of the forms of research outputs that are shared, and ... we need to examine how researchers’ investment in the accessibility and usability of research outputs at different stages in the research process are encouraged or discouraged by the interactions that they have with various stakeholders” (Neylon, 2017, p. 18) in higher education institutions. Open scholarship embraces a “broad range of efforts to make scholarship ... more inclusive, more accessible, more networked, and more effective” (Neylon, p. 4). Some professional associations have attempted to capture these discussions and have developed new criteria for evaluation to aid universities in implementing changes in their evaluative process (American Historical Association Digital History Working Group, 2015; Modern Language Association Ad Hoc Committee on Valuing the Public Humanities, 2022, August). Boyer (1990) declares that “diversity and potential cannot be fully realized if the faculty reward system is inappropriately restricted” (p. xii).

Purpose

The purpose of this study was to discern whether openness in scholarly communications and publishing practices—often amplified by advances in technology—had motivated changes in (a) the behavioral and scholarly practices (namely types of research and teaching outputs and channels for dissemination) of scholars in the target population, (b) their experiences in adopting these strategies, and (c) the impact these practices have had on tenure and promotion practices at the University. Although open scholarship includes any scholar who participates in a networked environment, the focus in this study was on academic scholars employed at one Western Canadian university (the University). I employed a phenomenographical approach to acquire a subjective understanding of the impact open scholarship practices have had on academic scholars employed at the University. An embedded triangulation mixed methods design approach was used for this mixed methods, multiphase study to obtain different but complementary data on the lived realities of academic scholars at the University. There were two phases to the study: Phase 1 included a survey using an explanatory sequential design. After the data collection and analysis was completed, interview participants were selected from those who volunteered. In Phase 2 of the study, I analyzed a selection of primary university documents related to tenure and promotion. Finally, a joint analysis approach was used to present the findings from the quantitative and qualitative studies.

Research Questions

To examine the concept of open scholarship and its value proposition within higher education, I will need to examine:

RQ 1: What forms of scholarship do tenure-track scholars at a mid-sized University in Western Canada practice?

RQ 2: Are some forms of communities of practice (CoP) more prevalent in some disciplines?

RQ 3: Are these new forms of scholarship applicable to all domains of scholarly practice (e.g., research, teaching, and service)?

RQ 4: What challenges do scholars face in disseminating research using new and emerging forms of scholarship, and whether they complement or replace existing channels for scholarly communications?

RQ 5: What is the impact of scholarship practices on the University and how do we recognize quality in this new publishing landscape?

RQ 6: What is the University's and professional associations/societies' response in providing benchmarks for evaluating these forms non-traditional scholarship, as it relates to tenure and promotion evaluation policies and practices? and

RQ7: What strategies and considerations need to be addressed for implementing changes that may be appropriate, depending on the context, for each department at the University?

Overview of the Chapters

This dissertation is structured into six chapters. Chapter 1 provides a historical overview of the growth and major changes in the scholarly communication practice of researchers in the higher education landscape, and a rationale upon which my study is based. In chapter 2, a conceptual framework for the practice of open scholarship is proposed. A summary of the literature relevant to this study is presented in chapter 3, including: trends in current scholarly communication practice, the current debate of its impact on scholar rigour, a sample of professional associations that have posited new criteria for tenure and promotion evaluation, as well as recommendations from scholars in the field. Chapter 4 describes the mixed methods research approach undertaken in the overall study and my researcher and epistemological orientation. The findings are presented in chapter 5. Chapter 6 provides a discussion of six key findings (i.e., access to resources and tools for research, adoption of open

intentions and initiatives, use of social media and implications, and university policies and guidelines, research and teaching outputs, and criteria for faculty evaluation), limitations of the study, recommendations for further research, and the implications of these results for scholars and administrators at the University. The chapter concludes with five recommendations for the University's administrators and scholars when considering changes to faculty evaluation practices. These suggestions include innovative evaluation models.

Chapter 2:

Conceptual Framework for Open Scholarship

Although technological advances have fashioned a multitude of new communication/publishing channels and propelled scholars into online environments where they have expanded their scope, influence, and changed some of their scholarly publishing practices, the phenomenon of open scholarship is still a new concept in relation to its impact in higher education. There was little evidence at the time of my review of the literature, to indicate a strong theoretical or conceptual framework for open scholarship practice. A few scholars and open advocates have, however, attempted to craft various schools of thought (i.e., rationales, conceptual or theoretical frameworks) for understanding open scholarship. The discourse is as diverse as the stakeholders engaged in or affected by this new scholarly ecosystem.

According to Fecher and Friesike (2014), open science (more commonly known as open scholarship in Canada) is an “umbrella term encompassing a multitude of assumptions about the future of knowledge creation and dissemination,” (p. 17) and its stakeholders included “[r]esearchers from all fields, policy makers, platform programmers and operators, publishers, and the interested public” (p. 18). Discourse among these stakeholders evoked a number of

different understandings ... ranging from the democratic right to access publicly funded knowledge (e.g. open access to publications) or the demand for a better bridging of the divide between research and society (e.g. citizen science) to the development of freely available tools for collaboration (e.g. social media platforms for scientists). (p. 18)

Table 2.1 describes Fecher and Friesike’s five schools of thought (democratic, pragmatic, infrastructure, public, and measurement), their stakeholder group, central assumptions, aims, and the tools and the methods used to promote their aims.

Table 2.1*Five Open Science/Scholarship Schools of Thought*

School of thought	Central assumption	Involved groups	Central aim	Tools, methods, and approaches
Democratic	The access to knowledge is unequally distributed.	Scholars, politicians, citizens	Making knowledge freely available for everyone.	Open access, intellectual property rights, Open data, Open code
Pragmatic	Knowledge-creation could be more efficient if scholars worked together.	Scholars	Opening up the process of knowledge creation.	Wisdom of the crowds, network effects, Open Data, Open Code, Text analysis
Infrastructure	Efficient research depends on the available tools and applications.	Scholars & platform providers	Creating openly available platforms, tools, and services for scientists.	Collaboration platforms and tools
Public	Scholarship needs to be made accessible to the public.	Scholars & citizens	Making scholarship accessible for citizens.	Citizen Science, Science PR, Science Blogging
Measurement	Scholarly contributions today need alternative impact measurements.	Scholars & politicians	Developing an alternative metric system for scientific impact.	Altmetrics, peer review, citation, impact factors

Note. Adapted from Fecher, B., & Friesike, S. Open science: One term, five schools of thought. In B. Bartling & S. Friesike (Eds.), *Opening science: The evolving guide on how the internet is changing research, collaboration and scholarly publishing*. (pp. 19-20). Springer, 2014.

Glushko and Shoyama (2015) state that libraries, as a stakeholder group in this discourse, provide financial and human resources for a number of open access initiatives, for example, licensing agreements that support access to a vast, growing literature in various fields, building content repositories, subscribing to institutional memberships, as well as subsidizing the cost of APCs established by publishers. The authors contend that libraries need to examine their returns on investment on open access (OA) initiatives. Drawing from the Budapest Open Access Initiative (BOAI, 2002) and existing literature on open access at the time, Glushko and Shoyama offer a theoretical framework, based on five open access rationales or motivations, for understanding why libraries support these initiatives:

- enlightened self-interest rationale—focus is on individual researchers “with the purpose of maximizing the impact and dissemination of their work,”
- enlightened group interest rationale—focus is on the “collective concerns of individual authors” and their “rejection of, or at least a challenge to, conventional methods of publishing or peer review,”
- neo-Marxist interest rationale—based on the premise that new technologies “transform and democratize publishing” and under these circumstances scholars as creators and owners of the material produced, have the concomitant right to distribute their “work without expectation of payment,”
- taxpayer rationale—academic scholarship is “subsidized in some manner, either through public funding ... or through private funding” and so “no one ... should have to pay twice for the same research,” and the
- social justice rationale—it is an “injustice to keep knowledge from those who need it ... [and] in accessible formats” to reduce global inequality. (paras. 8-13)

Glushko and Shoyama also acknowledge that the

five rationales and the motivations for supporting them are not necessarily mutually exclusive... [and nor did they] always operate in concert, and supporting open access as it is manifested in certain shapes and forms may advance the objectives that underlie some of the rationales without advancing the objectives of other rationales. (para. 14)

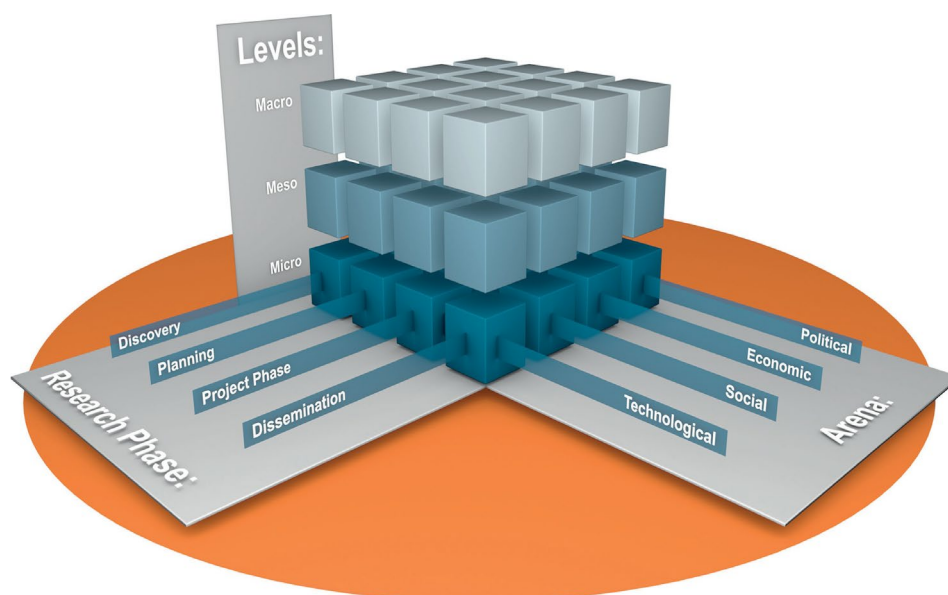
SPARC's executive director, Heather Joseph asserts that the "concept of open access to knowledge should be framed as a social justice issue.... The framing of access to knowledge as a permeating human right is foundational" (Shumaker, 2021, para. 5). For Joseph, the social justice framework includes four underlying principles: "access, participation, equity, and rights"—principles which helped SPARC understand that a "knowledge-sharing system has to be multidirectional" (para. 9), and one that will help change the current scholarly publishing ecosystem. Joseph advocates for a change in the current practice where authors sign over their rights to a commercial publisher, who in turn commodify the sharing of knowledge by asking authors to pay APCs to make articles open access immediately upon publication. In doing so, publishers have replaced "a barrier to access with a barrier to participation" (para. 13).

Fitzgerald et al. (2008) zeroed in on the *rights* concept and analyzed the "copyright law framework needed to ensure open access to outputs" (p. 233) (that is, looking at ways in which best practices in copyright management strategies are aligned with new web-based technologies developed for the creation and dissemination of scholarly outputs). The authors believe that access to knowledge drives "social, cultural, and economic development" (p. 470) and that publicly funded research should be openly accessible. Their work presents important considerations for: the development of university and funder open access policies, tracking publisher attitudes towards open access, and recommending model publication/licensing agreements.

Knowledge Exchange (2017; 2019), on the other hand, developed an open scholarship framework to help “identify where a process of change might be hindered (or helped) by the behaviour and motives of different actors, and to guide us to the missing link between the motivations and goals of different stakeholders” (2019, pp. 15-16). Figure 2.1 provides a visual representation of the three dimensions where change may occur: (a) the research phase/lifecycle (discover, planning, project, dissemination); (b) the arena where actions may take place (i.e., political, economic, social, technical); and (c) the levels (micro, meso, or macro) where analysis or interventions may be occurring. According to Knowledge Exchange, the movement towards openness in higher education is driven by a complex group of actors, each with their own political, social, and economic goals. Attempting any change in this ecosystem will take time depending on the resistance by its stakeholders to *culture change*.

Figure 2.1

Knowledge Exchange Open Scholarship Framework



Note. Neylon, C., Belsø, R., Bijsterbosch, M., Cordewener, B., Foncel, J., Friesike, S., Fyfe, A., Jacobs, N., Katerbow, M., Laakso, M., & Sesink, L. (2019). *Open scholarship and the need for collective action*. (p. 15).

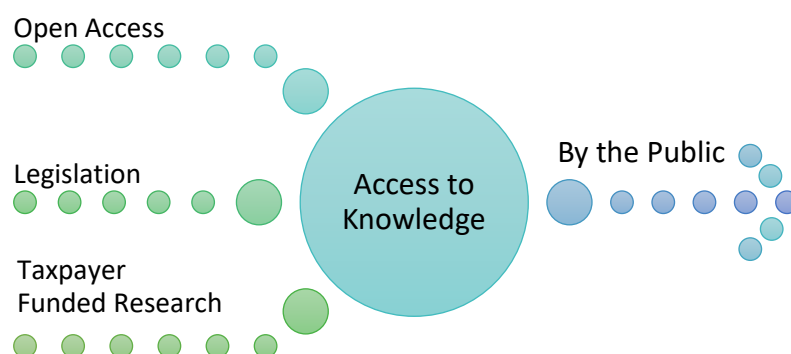
As a librarian and information professional practitioner a conceptual framework based on access to knowledge principles resonates strongly. My framework was derived from a selection of the frameworks described above namely, the democratic, public, measurement schools of thought described by Fecher and Friesike (2014), access to knowledge principles identified by Joseph (Shumaker, 2021), an individual's democratic rights as expressed through the legal framework proposed by Fitzgerald et.al. (2006), and the taxpayer interest rational defined by Glushko and Shoyama (2015). In this chapter, I explore a set of three rationales—open access, taxpayer funded research, and international law (i.e., legal obligations for access to information)—that support a conceptual framework for open scholarship in higher education (Fitzgerald et al., 2008; Glushko & Shoyama, 2015; Neylon, 2017; United Nations Educational Scientific and Cultural Organization, 2015). These rationales, which are based on access to knowledge principles (social justice, intellectual freedom, and economic development), represent, in essence, the major driving forces that inspired the creation, growth, and development of a culture of open scholarly practices and intentions by the scholarly community over the last two decades. What is important, is “not about where you publish, but who you reach,” and “there are many ways to make connections” (Neylon, 2012, August 10) with those who may not be part of one's traditional (academic) audience. The intended outcome is to find ways in which to maximize the reach for one's scholarship. Although Neylon's argument is laudable, tenure and promotion committees at academic institutions still expect scholars to publish in well-renown journals that are recognized by their institutions and disciplines—and “[t]here is ... a disincentive inherent in scholarly practice to explore new forms of publication” (Weller, 2011, p. 53).

The set of three rationales not only provides the basis for the formation of a conceptual framework that supported the development and expansion of a move towards open scholarship practices, but is the means by which scholars can further their discussions and engagement about open

scholarly practices and intentions (see Figure 2.2). The framework sets the stage for my research into the researchers' scholarly communications practices and publishing behaviour. Potential approaches and challenges faced by scholars are addressed in Chapter 3. The following three sections illustrate what, why and how open access, taxpayer funded research, and the legal rationales formed the framework for the development of open scholarship practices.

Figure 2.2

Access to Knowledge Conceptual Framework



Open Access Rationale

Developers of computer software code have freely shared source code among themselves since the 1960s, and these traditions “kept alive by the Free/Libre and Open Source Software (FLOSS) movement support the public release and distribution of the (human readable) source code” (Fitzgerald et al., 2006, p. 8). FLOSS, in fact, went beyond access to the *open source code* to include (a) the free distribution of the software, exempt from royalties and fees and (b) allowed for modifications and derivative works along with a number of other criteria. Advocates behind the open source movement believe that any form of constraint placed on the distribution and release of the source code constitutes

a barrier for collaboration—a philosophy that speaks to the sharing of ideas without restrictions, while allowing for creative initiatives (Krotoski et al., 2012).

The Bermuda principles (Sulston, 2002) represent the strategy used by scientists who were engaging in the task of sequencing the human genome. They wanted to make all the information from their work publicly available. It was an important building block to the FLOSS movement. In mapping the human genome, which began in 1990 and completed in 2003 (U.S. Department of Energy, 2019), scholars applied the following principles in their dissemination strategy:

- Automatic release of sequence assemblies larger than 1kb (preferably within 24 hours).
- Immediate publication of finished annotated sequences.
- Make the entire sequence freely available in the public domain for research and development to maximize benefits to society. (Sulston, 2002)

The human genome project and the FLOSS movement's practices made inroads towards the growth of an open culture among scholars in the science, technology, engineering, and mathematics (STEM) disciplines.

Open Access advocates moved the pendulum further forward when they defined the term "open access" through three consecutive public statements commonly known as the BBB declarations: (a) the Budapest Open Access Initiative (BOAI, 2002); (b) the Bethesda Statement on Open Access Publishing (2003), and (c) the Berlin Declaration of Open Access to Knowledge in the Sciences and the Humanities (2003). The most widely adopted definition of open access, formulated by the founding members at the BOAI meeting, describes how the "internet and new technologies could be used to advance the traditions of scientists to disseminate research outputs" (Colbridge, 2013, para. 1) for the public good:

An old tradition and a new technology have converged to make possible an unprecedented *public good* [emphasis added]. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet. The public good they make possible is the world-wide electronic distribution of peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds. *Removing access barriers* [emphasis added] to this literature will accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge. (BOAI, 2002, para. 1)

Over the years, the concept of open access has evolved and come to mean different things to different people, particularly commercial publishers, and other providers, who make their content accessible online to read via individual or institutional subscriptions (i.e., behind a publisher paywall). What sets the original BOAI open access standards apart from the motives of the commercial enterprises is the:

free availability on the public internet [of peer reviewed content], permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. (2012, para. 8)

The only constraint on the reproduction and distribution of this content is set around the author's control over the integrity of their work, and to be properly acknowledged and cited.

The Bethesda Statement (2003) extends the 2002 BOAI principles by defining an open access scholarly publication or output as one that gives prior consent to all users:

a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use. (para. 5)

Seldom mentioned are the statements issued by the funding agencies and publisher stakeholder groups at the Bethesda meeting. The funding agencies group encouraged “faculty/grant recipients to publish their work according to the principles of open access, in order to maximize the access and benefit to scientists, scholars and the public throughout the world” (para. 8). Although commercial publishers committed to offering an “open access option for any research article published in any of the journals” (para. 13), they adopted the principles of open access to their advantage by charging APCs, and in some cases exorbitant fees.

Representing another milestone in the open access movement, the Berlin Declaration (2003) succinctly summarizes both the BOAI and Bethesda statements and defined open access “as a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community [and to realize this vision] ... [c]ontent and software tools must be openly accessible and compatible” (para. 4). The Declaration also reiterates that authors and rights holders grant:

all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for

enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use. (para. 7)

The Berlin Declaration expands the definition of scholarly contributions to “original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material” (para. 6).

The three statements form a strong philosophical foundation that supports the access to knowledge principles—*free* access to scholarly outputs without barriers for the end user, while respecting an author’s intellectual property rights. Advocates of open scholarship (i.e., open access, open data, open science, open education, open government, etc.—see Figure 1.2) within higher education built upon the philosophical foundations set out in the FLOSS, Bermuda Principles, and BBB declarations. Furthermore, at its 2^{0th} anniversary, the BOAI steering committee (2022) released four new recommendations that:

- stressed building knowledge systems that are scholar led and promoted and supported a sustainable knowledge infrastructure system,
- favoured inclusive publishing channels,
- benefited all regions of the world, and
- adjusted research assessment systems to eliminate disincentives in terms of knowledge sharing.

The BBB declarations explicitly include non-academic potential audiences for open access literature (Doshi et al., 2022).

In 2001, Harvard law professor Lawrence Lessig stretched the BBB’s philosophical arguments further by developing open content licensing models for anyone to use with their intellectual property. These models better known as the Creative Commons (CC) licenses, encouraged

copyright owners to licence their material to a wider range of people, especially where it is distributed over the internet. Open content licensing involves making copyright material available on liberal terms, to ensure that it is readily accessible and available for reuse.

(Fitzgerald et al., 2006, pp. 10-11)

Wiley (2009, November 16) states that the words “‘open’ and ‘content’ were first used together ... [in] “an attempt to appropriately adapt the logic of ‘open source’ software to the non-software world of cultural and scientific artifacts like music, literature, and images” (para. 2). He asserts that works with an open license provide users with free and perpetual permission to engage in the 5R activities:

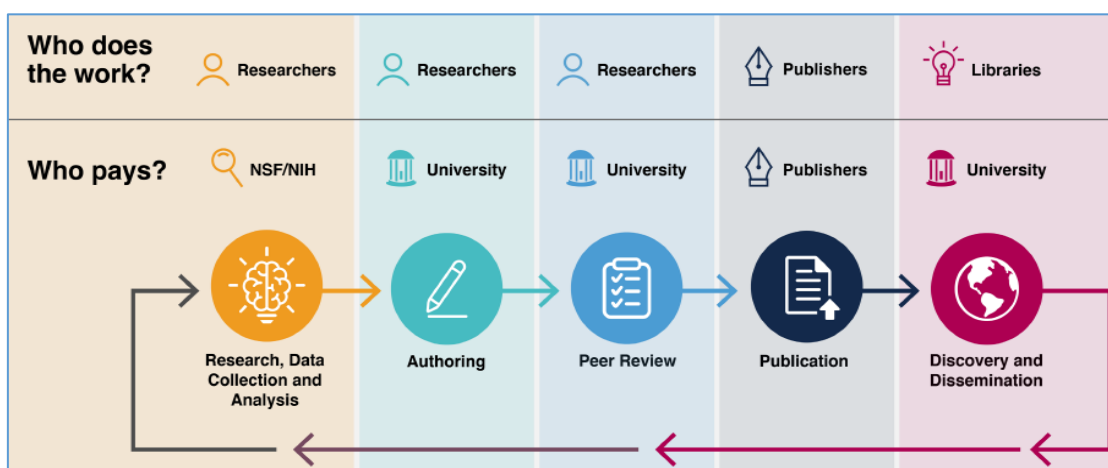
- Retain—the right to make, own, and control copies of the content (e.g., download, duplicate, store, and manage)
- Reuse—the right to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video)
- Revise—the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language)
- Remix—the right to combine the original or revised content with other material to create something new (e.g., incorporate the content into a mashup)
- Redistribute—the right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of the content to a friend). (Wiley, 2014)

Within the traditional scholarly publishing model, scholars often *give away* their scholarly outputs and intellectual property rights to publishers for free, which are then purchased back by libraries via journal or book subscriptions (see Table 1.1 for the average cost of online journals by discipline). This publishing ecosystem is generally termed the *gift economy*—a scholarly ecosystem where publishers benefit economically from the outputs produced by researchers. Scholars depend on

publishers to handle the publication processes (editing, typesetting, etc.), while they typically provide the value-added service of peer-review with no expectation of payment (see Figure 2.3 for a graphical representation for this system of scholarly publishing).

Figure 2.3

System of Scholarly Publishing



Note: From “Ad Hoc Committee: Future of Scholarly Communications” presentation by Westbrook, E. L., March 8, 2023.

The following academic publishers, Reed-Elsevier, Wiley-Blackwell, Springer, and Taylor & Francis account “for more than 50% of all papers published in 2013” (Larivière et al., 2015, p. 1)—they are the major players in a very competitive marketplace. These same five publishers “generated USD\$1.06 billion in revenues from gold and hybrid APCs from 2015-2018” (Butler et al., 2023). Westbrook, University Librarian at Cornell University, states that it is “not good for scholarship and it’s not good for innovation to have a small set of multinational companies, that we call an oligopoly, control all the academic publishing in the world” (Senzon, 2023).

The rapid development and proliferation of new online delivery channels and collaborative social media networks (Bosman & Kramer, 2015; Van Noorden, 2014, August 15) offer scholars with an open mindset alternative venues (e.g., open access journals and books, blogs, Figshare, Dataverse, and

GitHub/GitLab, discussions on radio broadcasts, TED Talks, webinars, podcasts, etc.) for disseminating their research, and a choice for managing or retaining their intellectual property rights. In moving towards more open practices, scholars could not only allow users full or partial access to their content, but they could potentially develop new peer-review standards for this new technology enabled content.

Lamentably, commercial publishers quickly capitalized on the surge of interest by scholars to make their scholarly outputs readily accessible to the public—they created new business models that commodified open access. These publishers charge scholars APCs as compensation for making scholarly outputs immediately accessible to the public upon publication. Publishers assign a Creative Commons (CC) license to these articles and allow authors to retain their rights. APCs generally range from USD\$500 to \$8,000 per article—an expensive proposition for scholars and institutions compelled to adhere to open access mandates/policies issued by a number of funding agencies. The Public Library of Science (PLOS, n.d.), explained that it charges authors APCs to “offset costs associated with peer review management, journal production and online hosting, and archiving” (para. 24).

Within this new business model, publishers offer scholars the option of publishing in: (a) a *gold* open access journal (where all the articles are published open access with the payment of a fee) or (b) a hybrid journal (where some articles are made openly accessible while others are only accessible through an individual or institutional subscription). In the hybrid-publishing model, the published articles are made openly accessible only when authors pay the APC. After authors elect to pay the APC, they have a choice between two CC licenses to disseminate their scholarship. Table 2.2 illustrates the CC license options offered by the publisher, Reed-Elsevier.

Table 2.2

Illustration of the Creative Commons License Options Offered by the Publisher, Reed-Elsevier

User license	Read, print and download	Redistribute or republish the article (e.g. display in a repository)	Translate the article	Download for text and data mining purposes	Reuse portions or extracts from the article in other works	Sell or re-use for commercial purposes
CC BY 4.0	Yes	Yes	Yes	Yes	Yes	Yes
CC BY NC-ND 4.0	Yes	Yes	Yes For private use only and not for distribution	Yes	Yes	No

Note. From “Open Access Licenses,” by Reed-Elsevier, 2018. Copyright 2018 by Reed-Elsevier.

In employing the *gold* or *hybrid* business models publishers not only use the “access charges ... as a cost-recovery measure,” but as a way of “generating profit for their shareholders ... [and] securing revenue streams to benefit their society members” (Anderson, 2018, para. 5)—thereby erecting a paywall/barrier between the content and the reader, as well as the reader and the author. Publishers do this while conducting business within the structures of the open movement. There are, nonetheless, several drawbacks with these gold and hybrid business models, namely:

- scholars do not have an unending supply of research funds to allocate to APCs,
- these business models “would exclude researchers from the developing world as the fees are simply out of reach” (Chan, 2009, para. 29), and
- while Canadian research libraries support the principles of open access, only some are able to devote dedicated and continued funding (i.e., an open access fund) towards article processing fees.

Glushko and Shoyama (2015) and Larivière (2015) asserted that the focus on publishers’ gold publishing models is detrimental to the public’s access to scholarship. With decreased funding from governments,

this business model has become unsustainable for most higher education institutions. Maskalyk (2007), in his editorial for the inaugural issue of *Open Medicine*, laments the inability for knowledge sharing when content is curtailed behind a paywall and “the debate over its merit is stifled before it can properly begin” (p. E1).

Is it any wonder that a service like Sci-Hub, created by neuroscientist Alexandra Elbakyan in 2011, rose in an attempt to solve this economic crisis? As of 2016, Sci-Hub (a service synonymous to Napster—a now defunct, illegal music streaming service), hosted over 50 million papers and covered every scientific topic available, and was accessed surprisingly by researchers in the developed and developing countries due to need or convenience (Bohannon, 2016). Bohannon concludes that Sci-Hub became “the world’s de facto open-access research library” (para. 6) and acted as a disruptive force to the traditional publishing industry. The goal of making publicly funded research accessible to the public under the gold or hybrid business models (where 3-5% annual subscription increases are the norm), has failed to provide a path of access to knowledge—instead it has formed an unsustainable financial proposition for academic institutions to support. In another example, Brewster Kahle, founder (in 1996) and director of the Internet Archive pushed the *universal access to all knowledge* principle further forward stating, “we need to put the best we have to offer within reach of our children” (2007). His initiative has collected and archived a digital library of books, documents (the Wayback Machine), audio recordings, videos, and more of out of copyright and content that is donated with permission. Unfortunately, some of his efforts have been met with lawsuits from the publishing industry.

It took a global pandemic like COVID-19 to accelerate the open access movement in leaps and bounds, and shifting the focus

towards a more digital focus for education and research. It also foregrounded ... the true value of open access content ... [where] accessibility and visibility of research [ensures the]

sustainability of scholarly communications ecosystems, [and supports] diverse research communities and the needs of the wider public. (Choynowski, 2022, para. 2-3)

The March 2020 UNESCO call for action addressed this and other areas: “Open Access to scientific information and open data facilitate better and faster research towards a vaccine and inform public health measures essential to contain the spread of the virus” (para. 1). Universal access to information and a variety of open solutions were encouraged in combatting COVID-19. In engaging with/in any of the open initiatives, scholars could:

- 1) act to democratize education so that “[a]nyone can learn anything from anyone at anytime” (Bonk, 2009, p. 7),
- 2) democratize knowledge production and dissemination via public online venues (Veletsianos & Kimmons, 2012b, p. 168),
- 3) change how we currently “think about, do, and represent research” (Kumashiro et al., 2005, p. 276), and
- 4) how we “engage in scholarship.” (Greenbow et al., 2009, p. 252)

In order to continue building and enabling the transition for a greater expansion of open scholarship practices, academic campuses will require administrators and faculty to understand the benefits and value derived from creator led advocacy around access to knowledge.

Participants at the United Nations’ open science conference (2019, November 18) identified the central role of open science in providing access to information and in accelerating the strategies for reaching the goals set out in the United Nation’s Sustainable Development Goals. As part of their discussion, participants also laid a Roadmap for Open Science guided by universal values (i.e., “inclusiveness and respect for diversity, equitable practice reciprocity and complementarity, universally shared benefits and opportunities for scientific education and social participation”) (para. 3) and

principles that applied to all scientists who receive public funding wherever they are located. Scholarly outputs from globally funded research should be:

- universally available (no lock-in and not sold as a premium service)
- as open as possible, as closed as needed
- as distributed as possible, as centralized as needed
- FAIR (findable, accessible, interoperable and reusable). (p. 2)

Access to taxpayer-funded research further strengthens the access to knowledge

principles towards an open scholarship framework.

Taxpayer-Funded Research Rationale

Since 2015, several major funding agencies worldwide, both public and private (e.g., Tri-Agency in Canada, National Institute of Health, World Bank, Michael Smith Foundation, Bill and Melinda Gates Foundation, Wellcome Trust, etc.), have through their funding policies built a research and innovation framework based on the principles of open access to scholarly outputs. For example, the World Bank's *Open Access Policy for Formal Publications* (2012) requires that all monographs, manuscripts, and reports created be deposited in its Open Knowledge Repository, under a Creative Commons (CC BY) license without delay, and with no more than an 18-month embargo, if required by a publisher. The organization is committed to open access and "supports the free online communication and exchange of knowledge as the most effective way of ensuring that the fruits of research, economic and sector work, and development practice are made widely available, read, and built upon" (para. 1).

With *Horizon 2020*, the European Union (EU) incorporated the principles of open access to research outcomes and data into European research practice and encourages member states to implement clear national policies to cover all the different aspects of Open Science; Rogers, 2014). Continuing this commitment, on September 4, 2018 several research funding organizations, with the support of the EU and the European Research Council (ERU), launched cOAlition S—an initiative

(commonly known as Plan S) to “make the full and immediate Open Access to research publications a reality” (European Science Foundation, 2019). Most importantly, they signaled their commitment with the following principle:

With effect from 2021, all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo. (para. 2)

Both the EU’s open access policy and Plan S place open access to knowledge at the heart of its research practice, making it easier for researchers and businesses to build on the findings of public-funded research. Some of these organizations are also working towards refreshing their policies to address systemic change in scholarly publishing by discontinuing their support for article processing fees to address inequities in publishing models, requiring preprints and the review of preprints to make research publicly available, and supporting an infrastructure and open access systems that ensure articles and data are readily available (Bill & Melinda Gates Foundation, 2024).

From a global perspective, the G7 Science and Technology ministers from Canada, France, Germany, Italy, Japan, the United Kingdom (UK), the United States (US), and the European Commissioner for Research, Science and Innovation (2023; 2017) reaffirmed their commitment to the shared values of democracy, rule of law, openness, and respect for freedom and human rights, as well as the importance of diversity, equity, inclusion, and accessibility, including gender equality, in research and development (R&D). They agreed to:

collaborate in expanding open science with equitable dissemination of scientific knowledge and publicly funded research outputs including research data and scholarly publications in line with the Findable, Accessible, Interoperable, and Reusable (FAIR) principles. This is so that researchers and people throughout the

world can benefit from them as well as contribute to the creation of new knowledge, stimulation of innovation, democratization of access to knowledge by society and the development of solutions for global challenges. This will also help to build more reproducible and trusted research results. (2023, p. 2)

The Research Councils of the United Kingdom (RCUK, 2012) had open access policies since 2005. The UK Research and Innovation's (UKRI; previously known as RCUK) *Open Access Principles and High Level Policy* (n.d.) reaffirmed both the RCUK's open access policies and the Research Excellence Framework adopted by UK higher education institutions. The UKRI's updated policy (2023) requires all research articles (published or accepted manuscript versions from April 2022 onwards) be published *immediately, without an embargo*, and with a CC BY license. Its open access policy also requires that monographs, book chapters and edited collections be free to view, available for download within a maximum of 12 months of publication and published with a CC BY license.

In 2017, the Wellcome Trust, a major funding agency in the United Kingdom, moved the pendulum further by permitting scholars to cite preprints or pre-peer reviewed manuscripts in their grant applications. The National Institute of Health (2017), Cancer Research UK (2017), and the Canadian Institutes of Health (Canadian Institutes of Health Research, 2017; 2023) also accept the electronic distribution of pre-prints as "important vehicles for the dissemination of research results" (para. 9). Cancer Research UK encourages its researchers to "explore open science and new publishing options" (para. 5) to accelerate and improve scientific progress. Scholars may list the existence of pre-print versions (on pre-print servers) in their curriculum vitae, but there is currently little evidence that tenure and promotion committees at universities, have shown a corresponding interest in valuing them—perhaps because there is no evidence of formal peer review evaluation attached to this version of the manuscripts. Working in tandem with its sister funding agencies in Europe, the US National Institute of Health's (2014) *Public Access Policy* requires all funded scholars to submit their "final, peer-reviewed

manuscripts upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication” (para. 1).

Recognizing worldwide momentum towards maximizing the impact of scientific research, previous US President, Barack Obama’s administration committed to “the proposition that citizens deserve access to the results of research their tax dollars have paid for” (Stebbins, 2013, para. 1). In response to this presidential directive, Director John Holdren, Office of Science and Technology Policy (OTSP), issued a memorandum directing “each Federal agency with over \$100 million in annual conduct of research and development expenditures to develop a plan to support increased public access to the results of research funded by the Federal Government” (2013, p. 2). These scholarly outputs included peer-reviewed articles and digital data. When one considers that, in 2014, 44% of research and development funding in the US was derived from the federal government (Kramer, 2019, para. 3), the policy would have a huge impact.

On August 25, 2022, President Joe Biden’s updated the US administration’s policy by issuing a memorandum guiding all federal departments and agencies to update their policies to “make publications and research funded by taxpayers publicly accessible, without an embargo or cost ... no later than December 31, 2025” (Nelson, 2022, para. 1). Nelson, head of the OSTP, states that “[w]hen research is widely available to other researchers and the public, it can save lives, provide policymakers with the tools to make critical decisions, and drive more equitable outcomes across every sector of society” (para. 2). Research universities in the United States will have to await the impact of the new policy—emphasizing “public access” over “open access”—when it is implemented at the end of 2025, but there are concerns about “who will pay the costs associated with the new policy, especially if publishing in a pay-to-publish journal becomes a widespread practice” (Brainard & Kaiser, 2022, August 26, para. 13)

In Canada, most academic research conducted at universities and degree-granting colleges is subsidized through government, private or public/private partnership funding. For example, “federal government funding accounted for \$3 billion in revenues in 2018/2019. Almost all of the federal funding (93.4%) was directed toward sponsored research through research granting programs” (Statistics Canada, 2020, para. 4), such as the Social Sciences and Humanities Research (SSHRC), the Canadian Institutes of Health Research (CIHR) or the Natural Science and Engineering Research Council (NSERC)—commonly known as the Tri-Agency. Canada’s principle granting agencies launched its *Tri-Agency Open Access Policy on Publications* in May 2015. Under this policy, grant recipients have two options to increase the dissemination and exchange of Tri-Agency funded research results:

- 1) publish in a journal which offers immediate open access or one that offers open access within 12 months of publication, and
- 2) deposit or self-archive their final peer-reviewed/accepted manuscript into an open access institutional or disciplinary repository that made the manuscript freely available.

The Tri-Agency’s shared approach to improve access to publicly funded research is guided by four major principles: 1) advance knowledge 2) minimize research duplication 3) maximize research benefits, and 4) promote research accomplishments. They note that “making research results as widely available and accessible as possible is an essential part of advancing scholarship, promoting intellectual inquiry and critical analysis, and applying knowledge to ensure that practical solutions are found to challenges facing Canadians” (Government of Canada, 2016b, para. 1). Butler et al. (2023) reported that CDN\$27.6M in Tri-Agency funds were paid in article processing charges to the big five for-profit publishers between 2015-2018. When the Tri-Agency conducted an internal study to track the amount of publicly funded research that was made open access they found that in 2018, the rates were: CIHR-66%, NSERC-46%, and SSHRC-40% (Government of Canada, 2024). These results were comparable to the open access rate (44%) reported by Paquet et al. (2022). The presidents of the Tri-Agency are still

committed to this approach but are reviewing the initial policy to align with international best practices, by international research funders and institutions, requiring immediate open access at the time of publication and without a subscription or fee. The renewed OA Policy will be released by the end of 2025 (Government of Canada, 2023).

In introducing their *Research Data Management Policy* (Government of Canada, 2021) the Tri-Agency believes that “research data collected through the use of public funds should be responsibly and securely managed and be, where ethical, legal and commercial obligations allow, available for reuse by others. To this end, the agencies support the FAIR (Findable, Accessible, Interoperable, and Reusable) the guiding principles for research data management and stewardship” (para. 3). In addition, scholars conducting research and collaborating with Indigenous Peoples of Canada need to have “data management principles developed and approved by these communities ... [based] on free, prior and informed consent” (para. 5). Finally, in February 2020 the Office of the Science Advisor of Canada issued the *Roadmap to Open Science*. The principles and recommendations in the roadmap are built in the context of the “Directive on Open Government, the Model Policy on Scientific Integrity and the Data Strategy Roadmap for the Federal Public Service,” as well as, the “Tri-Agency Open Access Policy on Publications and the Statement of Principles on Digital Data Management” (p. 6). This cumulative Canadian open science strategy:

- commits stakeholders to a shared commitment in the implementation, process and evaluation of its impact
- necessitates that scientific outputs are made “Open by Design and by Default and that they are FAIR (i.e., Findable, Accessible, Interoperable, and Reusable)
- requires that diverse and inclusive approaches be employed across communities and knowledge systems
- enables collaboration between and among communities within Canada and globally, and

- ensures a sustainable commitment towards a long-term vision. (p. 6)

All the above policies and advancements in the open access movement specifically targets the research community around the world.

The following paragraphs provide illustrations of advancements made by private and public organizations to support open scholarship practices within the teaching community in academic institutions. Next, I looked into the advancements made in open educational practices and the support for the creation of open educational resources.

In 2002, the Hewlett Foundation (Hewlett) defined open educational resources (OER) as “high-quality teaching, learning, and research materials that are free for people everywhere to use and repurpose” (para. 1). Hewlett then worked with a number governments and private/public organizations (e.g., UNESCO, Commonwealth of Learning, and Gates and Ford foundations) to bring open licensing to the teaching and learning domain and thereby driving change from mere “eccentric curiosity to mainstream adoption” (Kramer, 2016, para. 1). While the BBB declarations speak primarily from a researcher’s perspective, the Cape Town Open Education Declarations (*The Cape Town open education declaration, 2007; Cape Town open education declaration: 10th anniversary, 2017*) is a foundation built to promote “open resources, technology and teaching practices in education” (*The Cape Town open education declaration, 2007, para. 1*). The collaborators, supported by the William and Flora Hewlett, Mozilla, Open Society, and Shuttleworth foundations, proposed ten directions to accelerate open education by:

1. Articulating the meaning and value of open education in a way that “resonates with mainstream audiences,” (*Cape Town open education declaration: 10th anniversary, p. 5*)
2. Empowering the next generation of educators “who are still learning the practices and habits that will inform the rest of their careers,” (*Cape Town open education declaration: 10th anniversary, p. 6*)

3. Connecting with other movements to “explore and leverage ... shared goals,” to “advance openness and access to knowledge,” (*Cape Town open education declaration: 10th anniversary*, p. 8)
4. Centering the role of open education in advancing development around the world by reducing barriers to the supply of “quality, locally-relevant education materials, especially in underserved languages and regions that traditional market mechanisms do not prioritize,” (*Cape Town open education declaration: 10th anniversary*, p. 10)
5. Reframing “open as a set of practices and values” rather a “set of attributes we apply to content” to build bridges between the open movement and innovation, (*Cape Town open education declaration: 10th anniversary*, p. 14)
6. Exploring the intersection between open content, open data, and open learning to create an environment that is open, and peer reviewable while taking into consideration ownership over data generated by student users and privacy issues,
7. Moving beyond “promoting open textbooks that look, feel and act like traditional book” and be open to what “technology-enhanced open learning materials can be,” (*Cape Town open education declaration: 10th anniversary*, p. 18)
8. Governments adopting “policies that ensure that publicly funded educational resources are openly licensed and shared with the public by default,” (*Cape Town open education declaration: 10th anniversary*, p. 20) and
9. Reforming copyright legislation to include limitations and exceptions and “give teachers and learners the necessary freedoms to use ... resources for educational purposes, without having to ask for permissions.” (*Cape Town open education declaration: 10th anniversary*, p. 22)

Wiley (2017), a well-known advocate for open education, explains this ideological stance with a statement of belief:

that all human beings are endowed with a capacity to learn, improve, and progress. Educational opportunity is the mechanism by which we fulfill that capacity. Therefore, free and open access to educational opportunity is a basic human right ... [and] we have a greater ethical obligation than ever before to increase the reach of opportunity. (p. 198)

A landmark initiative by the US Congress (Allen, 2018) included funding for a \$5 million open textbook competitive pilot grant program. The move represented a major investment by Congress who saw it “as a solution to the high cost of college textbooks and underscores that course materials are a significant factor in making higher education affordable” (para. 1).

In Canada, the Ministry of Advanced Education, Skills Training in British Columbia (BC) funded the BC Open Textbook Project. BCcampus provides administrative leadership and support for the program. They “provide flexible and affordable access to higher education learning resources in BC by making available openly licensed textbooks that aligned with the most highly enrolled first- and second-year undergraduate subject areas, as well as in selected skills training and trades subject areas” (BCcampus, 2018, para. 1). In BC, approximately “86,000 students saved as much as \$9 million” since the open textbook program began in 2012 (Ministry of Advanced Education, 2018, para. 10). Although the BC initiative prompted other provincial governments (e.g., Alberta, Manitoba, Saskatchewan, and Ontario) to establish similarly funded programs, this funding has been inconsistent rather than ongoing. On a parallel front, four member organizations of the open textbook community (BCcampus, Open Textbook Network, Rebus Community for Open Textbook Creation, and Lumen Learning) issued a joint statement advocating for the use of a CC BY license when creating open textbooks (Beattie, 2016).

The Canadian government had an opportunity to follow in the footsteps of the provinces. Early in 2017, the Canadian Alliance of Student Associations appeared before the Standing Committee on Finance and recommended that “the Tri-Agencies create a pilot grant program, at an estimated \$8 million, to support the development and distribution of OERs” (2017, Recommendations). The Finance Committee agreed and adopted it in:

Recommendation 19

Support a pilot grant through the Social Sciences and Humanities Research Council of Canada, the Natural Sciences and Engineering Research Council of Canada and the Canadian Institutes of Health Research that would provide students and faculty with an incentive to develop open educational resources. (Canada, 2017, p. 5)

Lamentably, the Government of Canada has not shown any foresight in this area since the Finance Committee’s recommendation.

Open education and the development of open education resources (OER)—a term coined by UNESCO in 2002—formed part of “Open Solutions, alongside Free and Open Source software (FLOSS), Open Access (OA), Open Data (OD) and crowdsourcing platforms” (UNESCO, 2019, p. para. 1). All these open initiatives support the goal of access to knowledge for the public good without barriers.

International Laws Rationale

In this section, I considered existing international laws that promote, support, and provide a framework for open scholarship advocacy. Fitzgerald et al. (2006) offered several examples in international law to support an open scholarship framework, based primarily in the context of international human rights law. Firstly, Article 27(1) of the *Universal Declaration of Human Rights* (UDHR) specifically enshrines the rights of everyone to “share in scientific advancements and its benefits” and balances it with an individual’s “right to the protection of the moral and material interests resulting from any scientific, literary or artistic production” (United Nations, 1948). Secondly, Article 19

of the UDHR furthered this commitment with everyone's "right to freedom of opinion and expression; [and] this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers." In her report to the 20th session of the Human Rights Council (HRC) (2012), Farida Shaheed, Special Rapporteur on the field of Cultural Rights, considered this right to science intrinsically linked to the "pursuit of knowledge and understanding and to human creativity in a constantly changing world" (p. 3). In so doing, Shaheed recommended that:

(c) States ensure freedom of access to the Internet, promote open access to scientific knowledge and information on the Internet, and take measures to enhance access to computers and Internet connectivity, including by appropriate Internet governance that supports the right of everyone to have access to and use of information and communication technologies in self-determined and empowering ways;

(d) Universities, research and funding institutions adopt mandatory open-access policies for journals and repositories of research. (p. 20)

Interestingly, the right to information expressed in the UDHR extends to children. Article 17 of the *Convention on the Rights of a Child* (CRC) specifies that

States Parties recognize the important function performed by the mass media and shall ensure that the child has access to information and material from a diversity of national and international sources, especially those aimed at the promotion of his or her social, spiritual and moral well-being and physical and mental health. (United Nations Human Rights, 1990, p. 5)

Additionally, Article 13 of the CRC provides for the child's creative rights (i.e., freedom of expression) including a "freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of the child's choice." Other charters worldwide advocate for similar access to knowledge rights, including:

- Chapter II-Freedoms, Article 13 of the European *Charter of Fundamental Rights of the Union* (European Constitution) requires that “arts and scientific research shall be free of constraint” (Official Journal of the European Communities, 2000);
- The *Charter of the Organization of American States* requires that States “extend among themselves the benefits of science and technology by encouraging the exchange and utilization of scientific and technological knowledge” (Official Journal of the European Communities, 2000, art. 38);
- The *American Declaration on the Rights and Duties of Man* upheld the right of every person “to participate in the benefits that result from intellectual property.” (Ninth International Conference of American States, 1948, art. XIII); and finally
- Article 19 of the International Convention on Civil and Political Rights (ICCPR) provides for “a right to share information as well as protection of one’s reputation.” (Fitzgerald et al., 2006, p. 89)

The above international declarations, conventions, and covenants provide a basis upon which access to knowledge is expressed in human rights law.

Unfortunately, funder and organizational mandates and policies, as well as international laws advocating for access to knowledge have yet to infiltrate the echelons of higher education to change traditional tenure and promotion assessment practices. An individual scholar’s motivation towards open scholarly practices that are disrupting the information privileged traditional publishing cycle, may not necessarily agree with the corresponding motivations inherent in institutional policies that pertain to faculty evaluation and assessment. Additionally, the same scholar may be prevented from moving in the direction of true open practices due to lack of incentives and the culture of the communities in which they work (Neylon, 2017, August, p. 4). We need to assess current evaluation practices to determine how and where changes may be made following Boyer’s (1990) principles of scholarship to one that

promotes inclusive policies and practices around tenure and promotion that benefit the individual scholar, the university, and society.

In this chapter I have presented a conceptual framework based on three access to knowledge principles—open access, open access funding mandates, and legislation—that can be employed to advocate for the expansion of open scholarship practices in higher education.

Chapter 3:

Literature Review

In this chapter, I describe the scope and process undertaken for the literature review. After which, I provide a snapshot of research studies related to the new wave of scholarly communication and publishing practices (as described in Chapter 1) permeating across the disciplines in higher education (e.g., behaviour and practice among scholars, and challenges faced when adopting open scholarly practices). The next section presents illustrations of open scholarly *activities in praxis*. The final section focuses on the value proposition of the tenure and promotion process, and new models for benchmarking and methods for assessments proposed and implemented at universities.

The initial literature review, which was conducted between 2017-2018 and since supplemented, drew on broad and disciplinary related studies related to the current and emerging scholarly communication and publishing practices by academics in higher education. I was also interested in discovering instances of alternative scholarly practices and venues for publishing that provided descriptive illustrations of open scholarly *activities in praxis*, including the impact these activities have had on influencing the assessment of scholarly work in academia (e.g., benchmarks and methods for assessment proposed by scholars, professional associations and organizations, and university policies and guidelines). I began my research using the University of Victoria Libraries' multi-database search engine and employed a combination of search terms during this discovery phase: open scholarship, digital scholarship, non-traditional scholarly outputs, alternative scholarship, higher education, scholarly publishing, scholarly communication, research dissemination, scholarly outputs, social networks, faculty/scholarly collaboration, community engagement, intellectual property, academic freedom, university policy and practice, faculty evaluation and criteria, open access mandates, university policy, and tenure and promotion. Additional search queries were conducted, using the same keywords in Scopus and Web of Science databases.

When I started my literature review, open scholarship was not a ubiquitous phrase and the standard research databases excluded articles published in some open access journals. Open science as a concept is used in Europe. In Canada, the preferred phrase is open scholarship—one that is considered more inclusive to all disciplinary areas. Searches in Google Scholar and Google yielded results beyond the peer reviewed articles in traditional publications. These included citations from grey literature (e.g., white papers, opinion pieces, reports, material from professional associations, etc.) that were included in the literature review. In addition, at the time of the initial review there was no strong theoretical framework for open scholarship in evidence (see Chapter 2 for this discussion). The selection of relevant sources was narrowed by reviewing titles, abstracts, keywords, followed by a review of cited references within the works retrieved. Generally, the articles tended to focus on a particular disciplinary area, (for example, the digital humanities, education, and health sciences) and studies conducted tended to use one research methodology (i.e., survey, interviews, focus groups, or content analysis of tenure and promotion documents). Some professional associations posited suggestions on how universities could update their tenure and promotion policies, guidelines, and standards to reflect the new realities and demands placed on scholars working in higher education institutions. I used EndNote to capture the citations. What follows is a categorical breakdown of the literature.

Studies in Scholarly Communication and Publishing Practices

Researchers have attempted to better understand scholarly communication and publishing practices in higher education in light of emerging technological advancements, the development of various open movements, changes in government legislation, and funding agency mandates and policies. They have studied scholars' intentions and ambitions for publishing, their publishing tools of choice, where they shared their scholarly outputs, and challenges (e.g., tenure and promotion policies and practices, incentives for adopting non-traditional publishing practices, culture in workplace and

online, etc.) that impeded the realization of any of their choices. What follows is a selected sample of these studies.

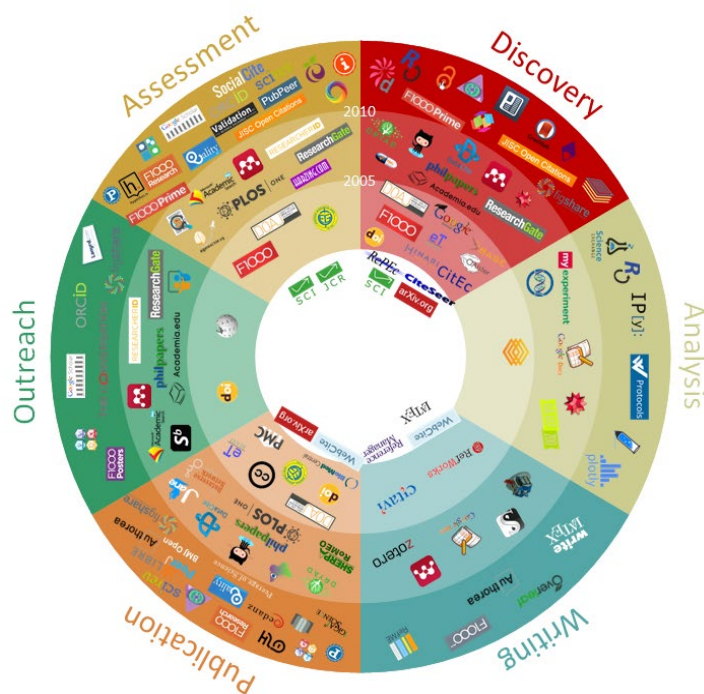
Bosman and Kramer (2015) conducted a global, multilingual survey in which they asked scholars across disciplines and career stages about their usage of various tools throughout the research workflow. They used the G-E-O model (i.e., whether the tool made the research workflows **Good**, **Efficient**, or **Open**) to assess the variety of outreach tools and networks intended for

- replication and reproducibility, transparency, and fairness as it related to reporting acknowledgement, credit, assessment, and quality checks;
- technical changes and standards that made science efficient: standardization of platforms and systems (interoperability, well-connected platforms and tools, and registration of digital objects and persons (DOIs and ORCID); and
- access to scholarship without barriers (open access, open data, open peer-review, open notes, open drafting, CC-0/BY, plain language, etc.).

Figure 3.1 visually documents the over 400 scholarly communication tools and social networking sites scholars use for a myriad of purposes within six categories of the research cycle (i.e., discovery, analytics, writing, publication, outreach, and assessment). Bosman and Kramer assert that these tools and networks support “a new way of working, or that repairs faults and omissions in existing tools offered by the major players” (para. 3). The push for new tools may have also come from funding bodies with mandates requiring open access to scholarly outputs and from scholars who want “to capitalize on the possibilities of the internet in collaborating” (para. 1).

Figure 3.1

Scholarly Communications Tools for the Purposes of Assessment, Discovery, Analysis, Creation, Publishing and Outreach Activities.



Note. From “Impact of Social Sciences – 101 Innovations in Scholarly Communication: How Researchers are Getting to Grip with the Myriad New Tools” by J. Bosman and B. Kramer, 2015, LSE – The Impact Blog. Copyright 2015 by Bosman & Kramer.

Springer Nature (Van Noorden, 2014, August 15) conducted a smaller but focused online survey about researchers’ perspectives on their usage of social media and social collaboration networks in relation to their academic work. They targeted scientists and academics on three publisher mailing lists (Thomson Reuters ISI [now Clarivate Analytics], Palgrave, and Nature Publishing Group) for their research and found that most respondents are aware of the biggest mainstream academic social networks and research profiling sites like Google Scholar, ResearchGate, LinkedIn, Facebook, Academia.edu, Twitter (now called X), and Google+ (see Figure 3.2). Besides using these sites

(sometimes in multiples) to boost their profiles for discoverability, scholars also use them to post content, discover peers working in related fields, track metrics, and find recommended research papers. The use of these digital tools changes over time when they are no longer supported, that is, they have a lifespan and can be affected by forces outside of academia (e.g., the purchase of Twitter).

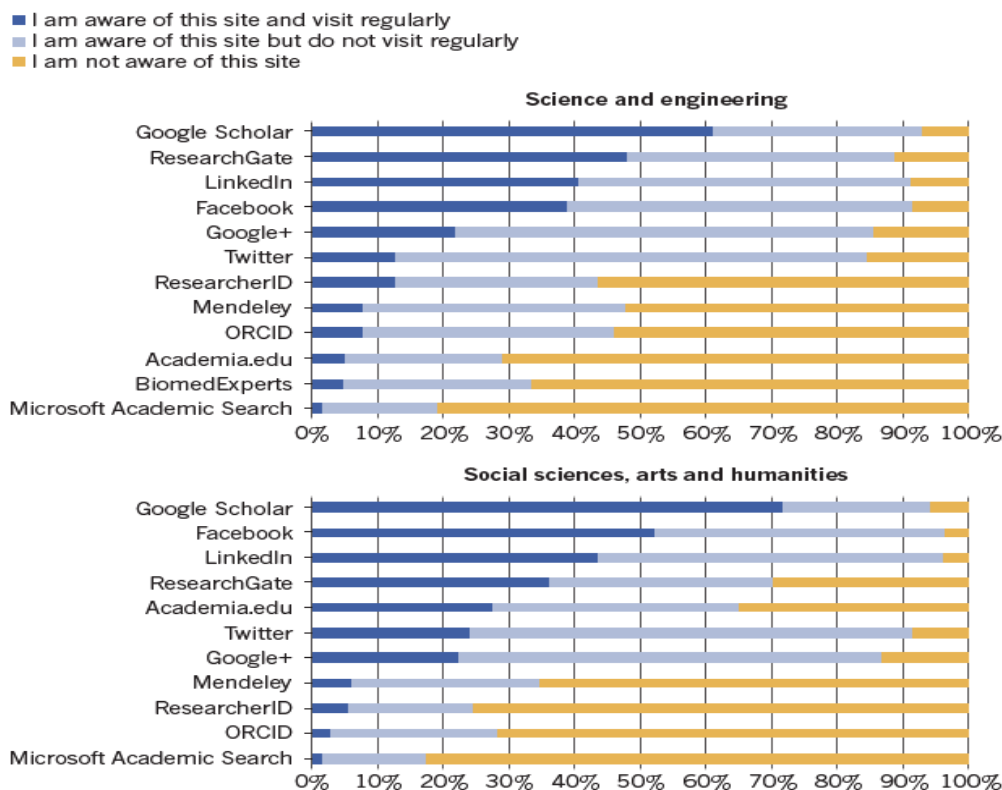
Interestingly, the study also reveals that scholars from different disciplines favour some sites predominantly over others and use some in a professional capacity and others where they are more social. ResearchGate is used more in the Science and Engineering disciplines (see Figure 3.3). Hogan and Quan-Hasse (2010) define social networking sites as “online media that afforded ‘two-way interaction with an audience, beyond any specific recipient’ ... also known as ‘many-to-many communication’” (p. 310). These sites connect people who need the information to those who have the information (Kingston, 2012). Gruzd and Goertzen also assert that “[c]ollaboration, creation and modification of online environments and the presence of user-generated content” (2013, p. 3333) typically characterize these sites.

Springer Nature conducted a follow-up to the survey conducted in 2014 (Frisch et al., 2017) to better understand researchers' views on their professional use of social media networks (see Figure 3.3). The data revealed that:

- Over three-quarters of respondents used social media site to discover or read content, compared to 33% in the 2014 study,
- Slightly over half of the respondents used social media for self or research promotion, and
- ResearchGate was still the platform with the greatest use, followed by Google Scholar.

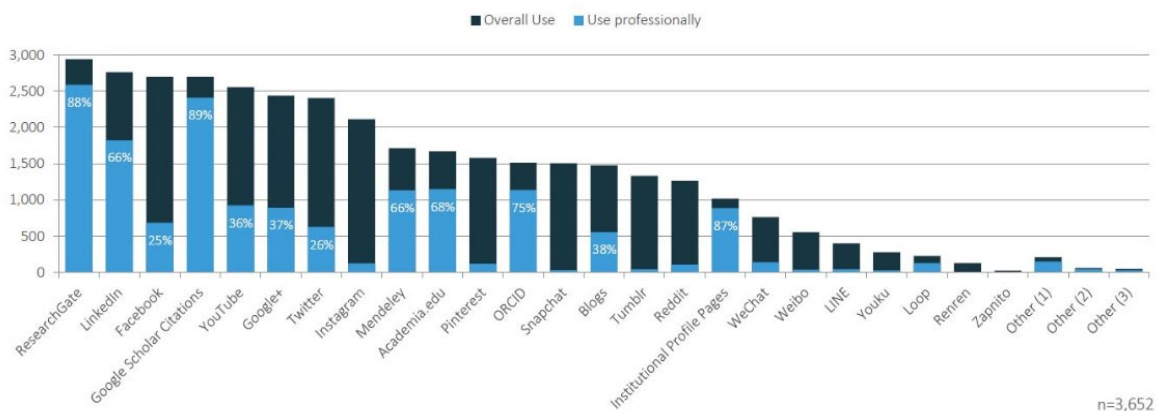
Figure 3.2

Platform Use by Disciplines

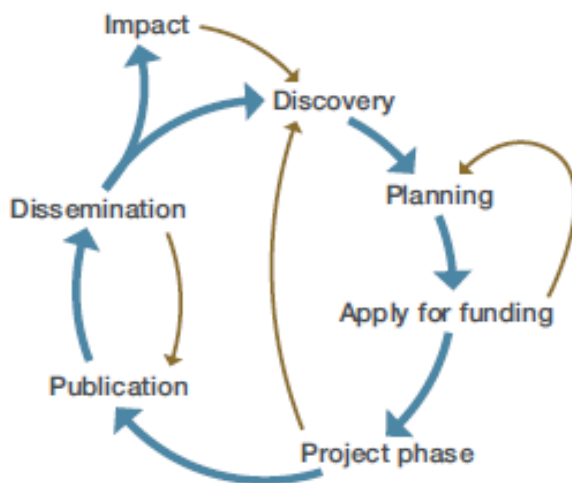


Note. From "Online collaboration: Scientists and the social network," by R. Van Noorden, 2014, *Nature* 512, 126-129. Copyright 2014 by Macmillan Publishers.

These studies depict a scholarly life cycle that is continuously evolving as developments in technology and shifts in scholarly practice occur. Not only has the "speed and the dynamics of communication between [scholars changed] the pace of research," but "new sets of tools challenge old divisions of work," and these changes represented a departure "towards a more dynamic network of interactions and communications that can take place at any time" (Neylon, 2017, August, p. 20). Figure 3.4 shows the main stages in the scholarly knowledge exchange cycle along with its dynamic interactions.

Figure 3.3*Overview of Social Media Platforms Used by Researchers*

Note. From Frisch, L., Harseim, T., & Goodey, G. (2017). *How do researchers use social media and scholarly collaboration networks (SCNs)?* Springer Nature.

Figure 3.4*Scholarly Cycle Showing Dynamic Network of Interactions*

Note. From "Knowledge Exchange Approach Towards Open Scholarship," by Knowledge Exchange, Open Scholarship Advisory Group, and C. Neylon, August 2017. Copyright 2017 by Knowledge Exchange.

Included in this grouping is an earlier study, initiated by the Association of Research Libraries and conducted by Ithaka Strategic Services (Maron & Smith, 2009), that offers a snapshot of successful new digital scholarly initiatives, strategies faculty employ across disciplinary areas, and the types of outputs they produce. They identified several types of digital scholarly outputs: e-only journals; reviews; preprints and working papers; encyclopedia, dictionaries, annotated content; data; blogs; discussion forums; and professional and scholarly hubs. The study's authors also learnt that:

- 1) Although innovative resources are found across disciplines, certain formats lent themselves to some disciplines more than others.
- 2) Almost every resource suggested by scholars incorporates peer-review or editorial oversight.
- 3) Digital publications are tightly controlled publications and directed at small, niche audiences.
- 4) Publications with multimedia content tend to blur the lines between resource types—a mash-up of traditional content categories (e.g., video articles, peer-reviewed reader commentary, and illuminated texts coded as data).
- 5) Most of the projects tend to subsist on an economic model that is not subscription based.

Notably, the frequency with which scholars access blog sites is dependent on the project they are working on, and any contributions to these sites represent interim stages in the development of scholarly thought and ideas and not a final product. In addition, some blog sites have a *controlled* form of informal scholarly communication where a limited number of authors are invited to contribute, in order to “maintain some degree of quality control and content vetting” (Maron & Smith, p. 25). Scholars are using many informal scholarly communication channels (like blogs, Twine, and exhibit software) to

disseminate information about their completed scholarship. Twine is an open source, non-linear story builder used in the humanities.

Expanding on the work of these earlier studies, Bonn (2017) interviewed scholars associated with the *Humanities Without Walls* initiative, and found that they use a number of different formats and platforms (e.g., performances, films, websites, written texts, academic presentations, interactive maps, interviews, museum exhibitions, YouTube, conferences, supplementary material accompanying a larger project, etc.) for expressing and sharing their work. Most of the scholars utilize a variety of venues to publish in order to achieve a broader impact—to reach their intended audience—and some see potential audience interaction with their scholarship as an important determinant (p. 207). Gruzd et al. (2012), Harley et al. (2010), Jordan and Weller (2018), Veletsianos and Kimmons (2012c), and Wolff et al. (2016) conducted similar studies to discover: how and why scholars use new media for communication and knowledge dissemination; the benefits and problems (tensions) associated with engaging on online networks; and how the scholarly profession, across disciplinary fields guide and influence their participation.

Harley et al. (2010) noted:

- sharing of scholarly work occurred at multiple stages of development;
- multiple authorship, while being the rule in the sciences, is increasing in economics and political science;
- large-scale collaborations is standard and increasing in the sciences as a result of “funding bodies demanding innovative approaches” (p. 16), while small pockets of complex collaborations are appearing in the humanities and social sciences; and

- scholars are looking for new publication models (e.g., electronic publications that extend the usefulness and depth of final publications, shorter monographs in some humanistic disciplines and longer articles in the sciences).

Jordan and Weller (2018) analyzed the unused text responses from the *Springer Nature* study (Van Noorden, 2014, August 15) to explore the “nuances of faculty uptake, by exploring clusters of co-reported benefits and problems” (p. 1). The benefits (e.g., presenting studies, making connections, and developing networks, self-promotion, staying up-to-date, dissemination, openness and sharing, tracking impact, etc.) reported by respondents match those reported in other studies and exhibit a consensus across academia. Conversely, the authors also note emergent observations that negate the perception of the online environment as “a safe and liberating space”—they found an environment with a “heightened sense of ... risks and inequalities” (p. 7). Other researchers (Carrigan, 2016; Cottom, 2015b; Rojas, 2015) describe instances where some academics have been subjected to “harassment and abuse through social media” and “on many occasions being subject to an institutional backlash ... [for] engaging in activities like blogging” (Carrigan, pp. 15-16).

While investigating the use of Twitter for scholarly purposes, Veletsianos (2012) reported examples of both positive engagement, such as sharing information about their classroom and their students, engagement in social commentary, in digital identity, and impression management (p. 2), and negative experiences like ‘becoming a target,’ ‘plagiarism,’ ‘risk of jeopardizing career,’ ‘time concerns,’ ‘privacy and security concerns,’ ‘commercialism,’ and ‘forbidden by institutions.’ In their interpretive study of three faculty members’ lived experiences within social networking sites, Veletsianos and Kimmons’ (2012c) found “personal-professional tensions” inherent in scholars’ use of social networking services (SNS) and only through “intentional self-structuring” could these balances be maintained (p. 4). For example, this is done by establishing personal and professional boundaries through appropriate meaningful connections, conversations, and participation within each SNS, to maintain a particular

image for each community. Additionally, Gruzd and his colleagues (2013; 2012) found social science scholars in the US, UK, and Canada accept social media sites as “legitimate and trustworthy methods for gathering and disseminating scholarly information,” but the “process of participating ... as time consuming ... a distraction that interferes with their ability to fulfill other professional responsibilities” (Gruzd et al., 2012, p. 3). Significantly, only eight percent of scholars surveyed indicate that their social media activities count towards tenure and promotion, and others attribute the low level of recognition to the lack of peer-review for these outputs as a cause.

In contrast, Ithaka Strategic Services’ 2015 faculty survey (Wolff-Eisenberg et al., 2016) tracked the attitudes and behaviour of scholars at four-year colleges and universities across the US and reveals that:

[r]espondents generally believe that more recognition should be awarded for traditional research publications, such as journal articles and books, as compared to research products, such as data, images, media, and blog posts. And respondents are most interested in reaching scholars in their specific subdiscipline or field of research and most frequently share their findings in peer-reviewed journals and published conference proceedings. (pp. 6-7)

From the above studies, we understand that change has permeated all aspects of scholarly activity—from discovering new works, sharing ideas, creation of a work, getting feedback on a work in progress, to knowledge dissemination and engagement within the scholarly community and the public. There is also evidence of pockets of resistance to change. Some are successful experiments and extolled, adopted, and mimicked by the communities for whom they were developed, while others are experiments in principle that have failed due to time commitments to other traditionally established scholarly communication and publishing practices. In still other cases, unexpected tensions have led to unintended outcomes for open intentions and initiatives.

Open Scholarship in Praxis

This section presents a selection of descriptive illustrations of scholars' open scholarly communication and publishing practices found in the literature, including their motivations for doing so. Of course, there are many more examples than I have space in this dissertation to expand upon. The following examples represent a selection of a continuously expanding landscape of scholarly communication practices that have the potential to disrupt current tenure and promotion evaluation practices.

Research, Discovery, and Writing

Risam (2014, August 7), a postcolonial scholar and digital humanist, posted a blog entry entitled *A Love Letter to Twitter*, in which she states:

Twitter has opened up the contours of the academy, widening my communities within it and linking me to the world beyond it. By using Twitter as a professional tool, I have become a person committed to working in public. I have learned more about genre, rhetoric, and audience than I ever did in college or graduate school. Ideas for articles, projects, and books germinated on Twitter. Twitter is proto-type scholarship; you won't find it in my tenure file but it's responsible for everything in it. (para. 2)

Risam started using Twitter as a graduate student and asserts that Twitter helped them develop their identity ("her voice") as an academic; Risam's tweets were primarily about academic issues and current events in her field of research. What she gained from her engagement with Twitter were "thought-provoking conversations to speaking and writing invitations to a vast academic network" (para. 9-10) that regularly challenged and shaped her work.

Rutner and Schonfeld (2012) found that historians' interactions with primary materials from archives have changed significantly to shape careers and research processes—it is easier

“to locate, access, and work with digitized materials ... this availability has fundamentally changed the research process for scholars” (p. 14). One historian mentions using Twitter and blogs to connect with the digital humanities communities when he has a question, while another researcher uses a blog to document a project testing new digital methods.

NINES (Networked Infrastructure for Nineteenth-Century Electronic Scholarship), on the other hand, gathers the best scholarly archive of the 19th century and makes them fully searchable in an interoperable database. It provides “an online collecting and authoring space in which researchers can create and publish their own work,” and “software tools for new and traditional forms of research and critical analysis” (n.d., paras. 1, 3). The space also serves as a “peer-review body for digital work” (n.d., para. 1). Scholars receive valuable feedback from colleagues as they write their books using a transparent review process—e.g., blogging chapters, providing themes for each chapter, and subsequently adjusting the online version. Each output is complementary to the other and provides greater depth to a work. Copyright in the final product belongs to the author (where previously, rights are signed over to a commercial publisher); it is available in multiple formats, and at times, freely available for download.

In December 2020, George Tzanetakis, a faculty member at the University of Victoria (UVic), launched a massive open online course (MOOC) with Kadenze, a commercial MOOC provider. The three-course MOOC program on Music Information Retrieval, available through the combined Computer Science and Music program, transforms an already popular campus course into online courses available to the world. The three courses, Tzanetakis believes, provides “his UVic students with important basic information, leaving more class time open for discussion and interactive exercises” (Tolson, 2021).

Publication, Dissemination, Outreach, and Engagement

In 2003, digital activist Cory Doctorow released his first novel, *Down and Out in the Magic Kingdom*, online and with a Creative Commons noncommercial license. Advances in technology and the development of new cultural norms around its development triggered his motivation. Doctorow gained an online audience that not only stood in for a personal recommendation, but also for selling his “reputation—the ebook itself became a ‘social object’”—one that allows Doctorow to take advantage of writing-related activities (e.g., invited articles, speaking engagements, an appointment as Fulbright Chair at UCLA, etc.). Doctorow asserts that he would rather engage with the dominant medium of the century regardless of its pitfalls (Doctorow, 2006).

In an Ithaka survey of historians (Rutner & Schonfeld, 2012), one scholar states that their blog has “tremendous readership” (p. 32) compared to their book that may have had 40 readers. Furthermore, a number of major journal publishers and editors (e.g., *Cell Press*, *New Journal of Physics*, *Clinical Gastroenterology and Hepatology*, etc.) are asking authors to describe their research in four- to five-minute video abstracts to accompany their scholarly articles (Berkowitz, 2013). They cite several reasons for moving in this direction:

1. watching a video allows you to figure out what the papers are about without reading a page;
 2. removing barriers traditionally associated with print publications;
 3. allowing authors to personalize their papers in ways that was not previously possible;
 4. using video abstracts to scan literature quickly and thus extending the reach of the article;
- and
5. allowing the author to describe “dynamic phenomena which are simply too complicated, too complex, too unusual, too full of information to do in words and two-dimensional pictures.” (paras. 4, 8, 10, 14, and 15)

The video abstracts posted on YouTube exist as a scientific equivalent to music videos and are used as a multimedia marketing tool to grow a readership base. Rydquist and Rais (2021/2022) believe that the emergence of new “content dissemination formats” have not only changed “the way research is consumed but also broadened target audiences” (p. 12).

Expanding on this movement, Jhangiani R. and Jhangiani S. (2017, August 14) not only posted a summary video on YouTube and the journal’s website communicating about their research, but made the associated research article freely accessible online. The article plus video multimedia format allows interested learners to interact with journal content in a social media environment (Berkowitz, 2013). Several peer-reviewed, open access journals (e.g., *Sensate: A Journal for Experiments in Critical media Practice*, *BC Studies*, *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*) are experimenting with multimodal publishing options for scholars to provide media-rich scholarship and artistic research. Some publishers (Services, n.d.) offer authors tips on creating video abstracts to introduce readers to their articles. Other scholars use these multimodal publishing options in their teaching practice—for example, asking their first-year students to prepare three-minute, abstract-style, oral summaries of the latest research or scientific paper. The enhanced teaching methodology helps students in understanding subjects. *The Conversation Canada* (2017) has introduced a new information source in the market for the dissemination of “news and views, from the academic and research community, delivered direct to the public.” Simon Pek, at the University of Victoria has written several short articles describing his research for *The Conversation* (n.d.).

Created in 1991, ArXiv was the first free scientific online pre-print article archive where physicists circulated research results immediately. It is accessible to anyone without subscription barriers. Since then, new pre-print servers in other disciplinary areas have emerged—BioRxiv for researchers in the life sciences, engrXiv for engineers, SocArXiv for the social sciences, LawArXiv for the law community (now defunct), medRxiv, Peer J Preprints, F1000 Research, and the Canadian HSS

Commons for the humanities and social sciences, among others. Each of these spaces offer alternative venues for scholars who want to provide immediate and free access to their research, and receive feedback on their research. Preprints played a major role in the quick dissemination of findings during the COVID-19 pandemic, leading to their reach beyond the academic community to policy makers and the public. A number of major funding agencies (National Institutes of Health, 2017; UK Research and Innovation, 2023; Wellcome Trust, 2017) are accepting references to preprints in grant applications. The CIHR (2017; 2023), has since the early 2000s, recognized preprints as an “important vehicle for the dissemination of research results” (last para.), and notes in its peer review guide that “[a]ll such contributions should be treated equally when assessing quality and impact, and reviewers should not regard certain types as “second class” or “grey literature” (2019).

In 1997, the US National Library of Medicine made Medline, the most comprehensive discovery database index for medical literature, freely available to the public. The first open access, peer-reviewed medical journal—the *Journal of Medical Internet Research*—was created in 1992. Another initiative with far-reaching consequences is the Science Commons’ Neurocommons collaborative project. Born in 2006 between Science Commons and the Teranode Corporation, the project seeks “to make all scientific research materials – research articles, knowledge bases, research data, physical materials – as available and as usable as they can be ... in a form that promotes uniform access” (2009, para. 1), while creating a semantic web or “commons” for neurological research.

In the humanities, the *Walt Whitman Archive*, directed by faculty at the University of Nebraska-Lincoln and the University of Iowa, presents an example of an online research site, teaching tool, and repository incorporating all works by and about Whitman. The virtual repository achieves several goals:

- established best practices for Encoded Archival Description (EAD) implementation across collections;

- tested EAD adaptability to the special needs of the scholarly community—especially scholarly editing projects;
- developed a model for scholar-archivist collaboration; and
- built a search interface adapted to the particular nature of Whitman manuscripts.

(Cohen et al., n.d., para. 3)

The *Orlando Project: Women's Writing in the British Isles from the Beginning to the Present* (Brown et al., n.d.) and the *Women Writers'* project (Flanders, n.d.) are *long-term* collaborative and innovative initiatives that create similar standards for interoperability, metadata, and data collection for online scholarly editions. In addition, faculty at the Virginia Tech History department (Winling, 2019) produced public-facing digital teaching resources (e.g., the Digital History Reader and the Virtual Jamestown) that is openly accessible. The Internet Shakespeare Editions (Best, 1996) hosted at the University of Victoria has been an innovator in providing online academic resources since 1996 on Shakespeare's scholarship and performance. Items on the website are peer-reviewed. Another project that has gained acclaim is Janelle Jenstad's Map of Early Modern London project (2022). It uses its own CRediT Taxonomy for acknowledging the roles individuals have played on the site. The *Map* allows users to visualize, overlay, combine, and query the information in the project's database.

Experiments in Peer-Review and Assessment

In 2014, Reed-Elsevier, the publishing company, conducted a pilot program with five journals to "make the peer-review process more transparent and improve the recognition reviewers receive for their work" (Mehmani, 2016, para. 1, 3). During the experiment, reviewers had the option to include their comments and names alongside the accepted manuscript, as well as listing their review in their ORCID profile and on publisher's reviewer recognition

platform. Reviews are assigned a separate digital object identifier (DOI) in order that reviewers can claim the report as a publication.

Most reviewers felt the open reports did not influence their recommendations or the “wording” they used and claimed they would conduct further reviews for the journal. The publisher used feedback from reviewers, authors, and readers to scale up the pilot program and develop processes and systems to increase efficiencies that would eventually offer the option to more journal editors. The publisher’s peer-review recognition platform also provides reviewers with a “personalized profile where their reviewing history” (Prechelt et al., 2014, para. 6) is documented and measured with journal-specific criteria, as well as shared with others (van Rossum, 2014).

Parallel, but unique experiments were conducted at the *Journal of Experimental Medicine* (JExpMed) and *eLife* (Kent, 2018). JExpMed provides its reviewers a short window during which they could read comments from other reviewers and make changes to their initial review. Though laudable in its goal to improve (the quality and effectiveness) the peer-review system, the journal did not conduct any internal monitoring to determine how frequently reviews were updated or changed, and in getting feedback from their authors and reviewers about the new “reviewer collaboration” process (para. 4). *ELife*, on the other hand, organized an open online consultation with its reviewers and then the editor wrote a “single letter with a single set of comments for the authors” (para. 4). At Faculty1000Research, an open publishing platform for life scientists, articles are submitted to the “community,” reviews are conducted openly (without editorial oversight), and new versions are uploaded in response to reviewer comments. *Synlett*, a chemical synthesis journal, experimented with a crowd-based (i.e., recruiting qualified reviewers and using a closed online forum) rather than a crowd-sourced (open to anyone for comment) peer-review model to help editors make better and quicker

decisions. *EMBO Journal*, on the other hand, simply uploaded the reviews alongside the article—seemingly the least burdensome of processes that most journals could undertake without much effort or cost (Kent, 2018).

Lee (2012) flipped the publisher-initiated, open peer-review mechanism favouring one managed by authors/reviewers themselves on a selected-papers (SP) network. Instead of reviewing a manuscript in secret for the editor of a journal, each reviewer simply published their review (typically of a paper they wished to recommend) to their SP network subscribers” (p. 1). Lee believed the SP network could work with existing publishing services such as journals, conferences, arXiv, Pubmed, and online citation management services. This mechanism for peer-review, however, did not receive much traction. Publons, founded in 2012 by Andrew Preston and Daniel Johnson, (acquired in 2017 by Clarivate Analytics) represents a global community or network of peer reviewers that Lee envisioned. The system allows reviewers to evidence their work as a reviewer, and to document the activity in their CVs.

Podcasting, according to McGregor (Rancic, 2021), is a scholarly output/form that is undervalued at universities. McGregor worked with McMenemy, Senior Editor at Wilfred Laurier Press, to launch a scholarly podcast network, *Amplify*—a platform supporting academics wishing to produce podcasts and have this unconventional publication form count towards tenure and promotion. The podcasts would undergo an open peer-review process before they premiered on the network. While experimenting with a new peer-review process for a new scholarly form, McGregor also hopes to

challenge the norms around what is an expert voice and what counts as scholarly knowledge, ... [and to] open up the space for dialogue with communities and publics who might not have thought of themselves as the audiences for scholarship, or who

have been deliberately excluded via the way that we sort of produce and publish scholarship. (para. 12)

Additionally, *BC Studies* crafted peer review guidelines for new forms of scholarly works like “soundworks,” podcasts and “digital works.” The *American Anthropologist* reviews multimodal work using a “crit-based review” format where reviewers have a conversation with the author/creator instead. . The *Journal of American History’s* Digital History Review provides an evaluation framework (content, design, audience, digital media, and creators) to assess a range of digital scholarly work/projects (2013).

It is evident from these illustrations that new scholarly communications channels and publishing practices are in constant flux: research communities of practice (CoP) have developed among these groups of individuals who share a “common interest, a set of problems or a passion and who increase their knowledge and understanding of these aspects through interpersonal relationship” (Wenger et al., 2002, p. 1). New digital tools have introduced “new pathways for the co-development of research with the broader community, opening the boundaries between knowledge creation and knowledge dissemination, which in turn is blurring the traditional roles and responsibilities of academics” (Arthur et al., 2021, p. 797). According to Veletsianos & Kimmons (2012b) open scholars and the open scholarship movement has a “strong ideological basis rooted in an ethical pursuit for democratization, fundamental human rights, equality, and justice” (p. 172). Another characteristic among these groups of open scholars is that they connect informally through face-to-face contact via meetings or workshops, or online through forums, blogs, and other collaborative spaces. In addition, their approaches (creation, development, and dissemination) although varied, are intended for different audiences and purposes. Regardless of the opportunities that have promulgated changes in scholarly practice and publishing, however, very little has changed in recognizing these activities in faculty evaluation processes at most institutions of higher education (Schimanski & Alperin, 2018).

Tensions exist between the “current drive to better connect academics with the communities they serve,” on the one hand and traditional university tenure and promotion policies that continue to emphasize the evaluation of “research excellence according to the quantity and quality of publications” (Alperin et al., 2019; Arthur et al., 2021, p. 797; Moore et al., 2017) on the other. An important consideration in the tenure and promotion discussion is whether the same set of peer-review criteria developed for the review of journals and books for a different set of tools and type of scholarship. Crissinger (2014) believes that scholarship should be “less about tenure and the vetting processes attached to it and more about changing the world, advancing knowledge, and making a direct impact on the city, state, or nation it is published in” (para. 13). Administrators and tenure and promotion committees stumble in this new scholarly environment to determine how we reward these new channels of knowledge dissemination: How is quality defined? Which scholarly outputs are central to each scholarly discipline? Do they reach across the teaching, research, and service areas? How is impact measured at the institution and the community?

Tenure and Promotion Value Proposition

Any discussion around open scholarship and scholars who practice within the open scholarship ecosystem inevitably leads to questions around tenure and promotion—exposing what faculty evaluation committees and institutions value or not value in academia. Tenure and promotion committees make recommendations to the university Provost/Vice President Academic, who then issues the final decision. It is through the tenure and promotion evaluation process that scholars achieve career transition to tenured appointments as associate professors and promotion to full professors. In Canada, junior scholars are initially appointed to the entry-level position of assistant professor. Promotion to associate professor (after five to seven years) is achieved through the tenure evaluation process established by faculty members in the department in which they are appointed. Those who have achieved tenure and worked for typically, at least another four years, from the time of being

granted tenure, before being granted promotion to full professorship. These conventions, expectations, practices and time frames may vary from institution to institution.

It is important to note that tenure processes/procedures differ from institution to institution and from department to department within the same institution. Although tenure as a system for faculty evaluation has existed for hundreds of years, Gravestock (2011) asserts that in Canada

the notion of tenure shifted from something that in the late 19th to the early 20th century was granted in a discretionary fashion, 'at the pleasure of the board', to a system that up until the mid-1960s awarded tenure during 'good behavior' (Horn, 1999a, b.). By the 1970s, tenure had evolved into what is often referred to as 'juridical tenure' and had become, in essence, an employment contract (Horn, 1999a, b). This form of tenure emerged in part due to unionization and collective bargaining efforts that had swept across Canadian (and American) campuses in the late 1960s and early 1970s. By this stage, tenure was no longer discretionary; rather, faculty were being evaluated formally, anywhere between three and seven years after their initial appointment through a more formalized evaluation process known as the 'tenure review.' (pp. 17-18)

Tenure in the United States (US), on the other hand, was established as an official policy by the American Association of University Professors (AAUP) in 1940 (para. 3). For most full-time scholars, tenure grants "them the right to exercise their research work without fear of unjust dismissal [and it] still represents a symbol of academic career mobility which comes with a promise of job security and academic freedom" (Ndandala, 2016, p. 29).

Historically, scholars putting together their proposal for tenure provide evidence to support their case in three major areas: research, teaching, and service—often described as the *three-legged*

stool, which is “unbalanced and precarious” (Agate et al., 2022, p. 23). Where *research* in most academics’ minds is of highest importance (Harley et al., 2010, p. 222), and “teaching is an uneven second, and service a very weak third” (Agate et al., 2022; Riddell, 2016). The research leg, by its diverse nature, is also considered the “most difficult to accurately represent, particularly to [tenure and promotion] committee members who are unlikely to be experts in the subject area of the individual and thus will require explanation and clarification on the nature of that individual’s contribution to the field” (Weller, 2011, p. 128). As evidenced through a review of the literature, current tenure and promotion evaluation practices do not always take account of Boyer’s (1990, 1996) contention that scholarship include the full spectrum of academic work, with equal emphasis in all three areas. That is, scholars conduct research to advance knowledge, while making connections across disciplines, and then applying this knowledge to solve problems that occur in the larger community, and educating future scholars about their scholarship (pp. 18-24).

Scholars who operate within the open scholarship framework use digital technologies and resources for research, teaching, and service purposes: whether to publish in online venues, create new digital resources, author collaboratively (produce co-authored outputs with colleagues and/or students), engage in community-based/engaged scholarship, create open textbooks, or utilize digital open-source tools. Moreover, open scholarship practices tend to cross traditional disciplinary boundaries—they are often interdisciplinary, multidisciplinary, and transdisciplinary in nature—and are considered by some difficult to evaluate under long-established (traditional) tenure and promotion evaluation practices. Ippolito et al. (2009) states that the

university, an institution that dates back to the 5th century BC, operates by calendar years rather than Web years, and academic review committees still expect candidates for promotion and tenure to hand them stacks of books and periodicals rather than a list of URLs. (p. 71)

According to a National Research Council report (2003) and Shatz (2022),

[t]he gold standard for academia—and the criterion most easily understood by parties outside a given subdiscipline—is the so-called archival journal (often published by scholarly or professional societies [and commercial publishers]) that involves considerable editorial selection plus prepublication review and revision, which function as a screening system for quality [conducted outside the academy]. But the long lead time for such publications poses problems for subdisciplines in which timeliness—quickly getting an idea into the field—matters. (p. 188)

There is no question that “funded research and publication of results in scholarly journals has become increasingly prestigious and dominant ... because dollars and numbers of publications are easy to measure and count” (Agate et al., 2022; Knapper, 2003, p. 7). Nevertheless, peer review remains at the core of this practice and functions as an important filter to recognize academic quality and historically, publishers provide the standards for determining quality. Do new forms of digital scholarship demand new processes and criteria for peer review—one not requiring traditional publishers provide the *quality* stamp of approval? A few studies have combined a discussion of emerging/changing models of scholarly practice and scholar intentions, with corresponding suggestions for changes in evaluative criteria documented in tenure and promotion documents across disciplines. What follows is a summary of selected studies.

Gravestock and Greenleaf (2008) conducted a major study involving 44 degree granting institutions. They collected publicly available documents on university websites and examined institutional type, student enrollment numbers, faculty ranks (both teaching stream and professorial appointments), tenure and promotion policies, and their associated processes and criteria (p. 2). The authors note that faculty “in the tenure-stream are normally evaluated based on their teaching,

research and often their service to their institution” (p. 3), and they are expected to reach a certain standard for both teaching and research. Language used to define academic work varies from competence, excellence, effectiveness, or evidence of performance. According to the authors, there is apparently no greater emphasis of research over teaching at research institutions, nor of teaching over research at primarily undergraduate institutions (Charbonneau, 2009). Table 3.1 provides a summary of common elements of measurement used for faculty evaluation in the study—encapsulating traditional standards that have not significantly changed since its inception. The only anomaly of note was the inclusion of “policy papers” under “research” as an example of “non-peer reviewed publications.”

In a subsequent study, Gravestock (2011) focused on the extent to which recommendations in the literature related to the evaluation of teaching were reflected in tenure and promotion documents at Canadian universities. She found the universities of Alberta, British Columbia, Saskatchewan, York, and Nipissing have policies that best reflect the recommendations from the literature and use them as a foundation for change. She also discovered widespread use of course evaluations and an increasing use of teaching dossiers to document teaching contributions. Although Ndandala’s (2016) study (review of tenure and promotion documents and interviews in-person or via survey) also involves education faculty, its focus was specifically on unionized and non-unionized environments, across ranks of professorship and gender at six Canadian public research universities. Ndandala found that research and teaching activities are over-emphasized at non-unionized universities, faculty generally express frustration with inconsistencies in appraisal standards across departments, there are peer rating bias or lack of feedback from peers, and dissatisfaction with the shortcomings of student evaluations. Gravestock’s study (2011) mirrored identical problems with student evaluations of teaching, citing its lack of objectivity in the measurement of teaching effectiveness. To prove this point, in August 2018 an Ontario arbitrator directed Ryerson University to stop using student evaluations of teaching as a measure of teaching effectiveness for promotion and tenure. Until more reliable means of evaluating

faculty teaching, comprehensive teaching dossiers and peer evaluations may be more reliable indicators of teaching effectiveness (Farr, 2018, August 28).

Table 3.1

Summary of Measurement Used by Tenure and Promotion Committees for Faculty Evaluation

CATEGORY	CRITERIA
Teaching	<ul style="list-style-type: none"> • Data from student evaluations – normally from all courses taught • Peer review of in-class teaching and course content • Publications and research about teaching and learning • Teaching awards • Contributions to program and curriculum development • Sample teaching materials • Teaching dossier – including a comprehensive collection of evidence: teaching philosophy statement, information on pedagogical strategies used inside and outside the classroom, sample student work, and evidence of professional development and mentorship.
Research	<ul style="list-style-type: none"> • Significant peer-reviewed research publications in a faculty member’s field. This might include books, monographs, journal articles, and book chapters • Participation at conferences and in meetings of professional organizations • Receipt of research grants • Review and editing responsibilities (e.g. journals, textbooks, etc.) • Non-peer reviewed publications (e.g., policy papers) • Letters of appraisal from colleagues.
Service	<ul style="list-style-type: none"> • Participation in departmental/division/institutional committees • Participation in institutional governance processes • Academic administrative appointments • Community service (where relevant to academic expertise) • Faculty association responsibilities.

Note. Data extracted from *Overview of tenure and promotion policies across Canada* by P. Gravestock and E.G. Greenleaf, 2008, p. 3. Copyright 2008 by P. Gravestock and E.G. Greenleaf.

Alperin et al. (2019) gathered 864 tenure and promotions documents from 129 academic institutions in Canada and the United States to examine the degree to which criteria and guidelines mention open access, public engagement, research metrics, and forms of research dissemination. The results reveal that only 5% of institutions (six out of approximately 120 institutions) make explicit mention of open access, and in doing so called attention to the predatory nature of open access journals, and in some cases inaccurately. While the term *impact factor*, is used in a higher proportion of documents by research-intensive universities, words such as citations, h-index and rejections were prevalent, particularly in documents related to the physical science and mathematics departments, compared to the social sciences and the humanities. In addition, they found that the guidelines used specific terms for measuring research outputs (e.g., article, book, and refereed), and vague terms like *significant*, *substantial*, and *demonstrable* were associated with *public*, *community*, and *quality*. Alperin et al. (Alperin et al., 2022) conducted another study utilizing the same data and identified 127 different kinds of outputs, accompanied by a full description for every term listed.

Wical and Kocken (2017), on the other hand, examined department and program evaluation plans at the University of Wisconsin-Eau Claire, for the specific purpose of determining whether tenure and promotion documents provide evidence of “any biases or potential biases for or against open access” publishing (p. 112). The authors found that although most of the documents provide reviewers with a “tremendous degree of flexibility to evaluate the scholarly achievements of faculty peers,” and accept a variety of publication types (stressing format neutrality), none of them mention “open access” (pp. 114-115). Some departments offer potential support for open access by using format neutral language such as: “articles in refereed journals, in print or on-line,” “electronic or online scholarship,” and “subject to the same standards as non-internet scholarship/creative work.” A few forward thinking departments emphasize dissemination instead of where the work is published, thereby allowing review

committees to “make judgements on the quality and importance of these activities” or in some exceptional cases, encourage scholars to “recommend a different ranking for their own work” (p. 115).

Harley et al. (2010) also found some variances in the descriptive criteria for judging the quality of a scholar’s work at every institution and department—indicating that some flexibility is utilized.

Traditional models for assessment, however, continue to exist:

- Monographs and secondarily, journal articles are more important in the humanities, while journal articles are key to the science disciplines.
- Though preprint cultures raise the scholar’s visibility, they are rarely considered in the final promotion dossier.
- Credit may be given for producing datasets, exhibitions, software, etc., but “without high impact publications, such activities do not count for much.”
- Established scholars seem to “exercise significantly more freedom in the choice of publication outlet than untenured colleagues.”
- Some scholars expressed a need for a “more nuanced tenure and promotion system that could judge ‘intermediate’ forms of scholarship, ... something in between ‘service to the field’ and a more formal peer-reviewed publication that advances a well-developed scholarly argument.” (pp. 8-9)

A similar reluctance to move beyond the traditional criteria for faculty evaluation was reported by others (Cronin & Overfelt, 1995; Hattendorf Westney, 2004; Hurrell & Meijer-Kline, 2011).

Agate et al. (2022) conducted interviews across the Big Ten Academic Alliance in the United States (BTAA), focusing on the reappointment, promotion, and tenure processes to investigate the “current systems of evaluation within BTAA institutions, the potential problems and inequalities of those processes, the kinds of scholarly work that could be better recognized

and rewarded, and the contexts and pressures evaluators are under” (p. 1). They encountered a number of issues: “toxicity in evaluation, scholars’ increased alienation from the work they are passionate about, and a high-level virtue-signaling of values by institutions without the infrastructure or resources to support the enactment of those values” (p. 1). In response, the authors offer a number of recommendations to institutions who want to make “wide-scale change to address systematic injustice, erasure, and devaluation of academic labor in order to strengthen the positive public impact of scholarship” (p. 1).

Several organizations and groups of individuals have attempted to address the need for change in faculty evaluation practices. The San Francisco Declaration on Research Assessment (DORA, 2012) and the Leiden Manifesto (Hicks et al., 2015), and the Coalition for Advancing Research Assessment’s (CoARA) reform on research assessment (2022) developed a set of principles for the responsible use of research metrics and how research and scholarly work is assessed. In 2019, Canada’s research funding agencies—the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Social Sciences and Humanities Research Council of Canada (SSHRC) (the Agencies); Genome Canada; and the Canada Foundation for Innovation—signed onto DORA affirming their “commitment to excellence in research evaluation and the importance of knowledge translation” (para. 1). Seven Canadian universities and the Canadian Association of University Teachers are also signatories of DORA. DORA addresses several issues:

- 1) Research outputs come in different forms, including research articles, data, software, etc.
- 2) The journal impact factor currently used as the primary denominator to assess the research outputs of individuals and institutions and calculated by Thomson Reuters [the publisher], was originally “created as a tool to help librarians identify journals to purchase, not as a measure of the scientific quality of research in an article.”
- 3) Citation distributions within journals can be “highly skewed” and highly field specific.

- 4) Journal impact factors can be manipulated or “gamed.”
- 5) The factors used are “neither transparent nor openly available to the public.” (para. 3)

General themes running through the DORA recommendations include the need to:

- eliminate the use of journal-based metrics, such as Journal Impact Factors, in funding, appointment, and promotion considerations;
- assess research on its own merits rather than on the basis of the journal in which the research is published;
- capitalize on the opportunities provided by online publication (such as relaxing unnecessary limits on the number of words, figures, and references in articles, and exploring new indicators of significance and impact. (para. 4)

Senior university administrators’ continued obsession with strengthening their reputation in the global rankings (e.g., *Times Higher Education’s* list, *QS World Rankings*, etc.) have served to incentivize (i.e., allocation of research funding or bonuses) and base tenure and promotion decisions on “threshold h-index values and on the number of articles published in ‘high-impact’ journals” (Hicks et al., 2015, para. 6). According to Arthur et al. (2021)

[f]ew universities are using new altmetrics and reward systems with emphasis on the use of digital systems for the open sharing of data, knowledge, and new ideas for societal benefit, resulting in a gap between attitudes toward open scholarship and actual practice. (p. 804)

No single evaluative measure should be used to measure scholarly performance in all disciplinary contexts. The creators of the Leiden Manifesto (Hicks et al., 2015, April 23) offered a roadmap (ten principles) to guide researchers and evaluators towards best practices in evaluating scholarly performance. They believed that research excellence and performance should be: based on the research

mission of the university, used multiple indicators for assessments, and adhered to the publication practices in the discipline and the individual scholar's portfolio (pp. 430-431).

The Coalition for Advancing Research Assessment ([CoARA], 2022) agreement is meant to establish common research assessment practices on a number of levels: research funding organizations, research performing institutions, national assessment authorities, and associations and learned societies across the globe. Canada is a signatory. Its principles for assessment criteria include a recognition of quality (originality of ideas, variety in methods and processes, etc.) and the impact of research results (scientific, technological, economic, and or societal in nature); the diversity and inclusiveness of research activities and practices, a diversity of outputs, as well as rewarding sharing and open collaboration. Supporting the above agreement is a recent call for open infrastructures that are "free for all, more transparent about their methods, and without restrictions about how their data can be used" (*Barcelona declaration on open research information, 2016*).

The above studies and international calls for change point to an obvious need to improve and update the manner in which administrators at academic institutions are encouraged to create more inclusive tenure and promotion policies and evaluative practices, where emerging scholarly practices and outputs are acknowledged and accepted alongside traditional scholarly practices and outputs.

According to Nowviskie (2011), tenure and promotion committees have been working with inherited methods and benchmarks for assessing scholars. Purdy and Walker (2010) contend that "discussions have tended to focus primarily on establishing digital work as equivalent to print publications to make it count instead of considering how digital scholarship might transform knowledge-making practices" (p. 178). The tension or challenge that academe is currently facing concerns the formulation of new standards to supplement traditional tenure and promotion standards/criteria and practice that will encourage, recognize, and reward open scholarship publishing practices. These include

“collaborative authoring, ongoing iteration, absence of page limits or page costs, or markedly different time-to-publication than print monographs intersect with assessments of quality” (Bartanen, 2014, para. 4).

Scholars at the University of California, Los Angeles’ Digital Humanities program stated that, “new knowledge is not just new content but also new ways of organizing, classifying, and interacting with content. This means that a major part of the intellectual contribution of a digital project is the design of the interface, the database, and the code, all of which govern the form of the content” (Presner, 2012, para. 4). In this new scholarly environment, digital availability of research and teaching outputs allows for “referencing, quoting, linking, tagging ... [with metadata that] identifies the document, categorizes it, contextualizes it, summarizes it ... while also allowing others to enrich it with their own comments, tags and contextualizing elements” (Jensen, 2007, para. 31). The challenge universities face will be in ensuring that scholars engaged with both traditional and emerging scholarship practices are “fairly judged in hiring and promotion decisions. It will mean not only being open to the widening context in which scholarship is published, but that faculty members will have to take the time to learn about—and give credit for—the new authority metrics, instead of relying on scholarly publishers to establish the importance of material for them” (Jensen, para. 33). Upon reflection, the American Council of Learned Societies (2006) stated:

We might expect younger colleagues to use new technologies with greater fluency and ease, but with more at stake, they will also be more risk-adverse.... Senior scholars now have both the opportunity and responsibility to take certain risks, first among which is to condone risk taking in their junior colleagues and their graduate students, and making sure that such endeavours are appropriately rewarded. (p. 34)

Sample (2012) spoke to his personal experience with George Mason University's (GMU) tenure policy that allows candidates to apply for tenure on the basis of "genuine excellence in research" or "genuine excellence in teaching" (para. 1). GMU's criteria for teaching comprises an "evidence of teaching and learning impact beyond the classroom" (para. 2), including books, articles, blogs, talks, digital projects, and teaching portfolios, and an emphasis on a form or platform that he describes as neutral or agnostic. The dean, who recommended Sample's promotion exemplified this new breed of enlightened administrators that we need at our institutions. He noted the following about the impact of Sample's blogging efforts:

Dr. Sample openly engages readers in comments, this constitutes an effective and new form of public intellectual work. For these new types of publications, whose spontaneity is their hallmark, prior review must give way to subsequent analysis, and in this Dr. Sample has excelled. (2012, para. 6)

Harris (2012), on the other hand, lamented upon the lack of professional documentation models to explain her fields of research in digital humanities, scholarly editing, and digital pedagogy. Harris' dossier included her research statement, work on Twitter and blog, and an explanation about her digital archive—complete with a demonstration of impact via citations from the previous seven years, awards, recognition from peers/publishers, unsolicited letters from students, and invitations to present at conferences, and workshops or give keynote speeches. More importantly, Harris noted the opportunities that San Jose State University afforded to explore both "traditional and non-traditional venues for service, teaching and scholarship" (para. 12). After the University of British Columbia (UBC) included new language recognizing open educational resources in the institution's tenure and promotion guide, Hendricks, a professor of teaching in the Department of Philosophy received tenure through the stream impacted by this change (2023). Hendricks affirmed that this change was significant

because it recognized the value of open practice in the tenure evaluation for teaching track professors at UBC:

Including open in the list of examples for educational leadership is important because it brings it to the forefront. When I went up for promotion, I took a risk because engaging in open practice was not listed as an example of educational leadership, but not everyone is going to do that. Whereas if it's strictly laid out it raises the profile for those who haven't thought about open education and also shows that it is valued by the university as being a form of educational leadership. (Yano, 2017, para. 6)

These experiences from faculty serve to highlight their importance to tenure and promotion evaluation process and a way for institutions to incentivize open practices—thereby modelling a way for others to follow (Yano, 2017).

Biologists, as a group, felt that the current peer review system was both “necessary and antiquated,” and not a perfect system for judging the “technical quality and ... whether an article is suitable for a particular journal” (Harris, 2018, para. 11). In addition, they had concerns over the lack of transparency of peer reviews, the snail’s pace at which science communication occurs, and most importantly, that researchers were judged primarily by the journal in which they published their work and not the work itself. Their solution was to publish their findings in an online preprint server called bioRxiv, similar to what physicists have done in ArXiv for many years. Preprint servers are openly accessible, moderated archives that allow scholars to communicate their findings immediately to their disciplinary communities and receive feedback on draft manuscripts before they are submitted to journals (bioRxiv, n.d.). Submissions to preprint servers are “reviewed by expert moderators to verify that they are topical and refereeable scientific contributions that follow accepted standards of scholarly communication” (arXiv.org, 2010, August 5, para. 2). Eisen, a Howard Hughes Medical Institute

investigator at the University of California, Berkeley, calls it a system of review before publication and flipping the publication priorities, while allowing the community to share with each other quickly (Harris, para. 25). The Canadian Institutes of Health Research (2017; 2023) recognized preprints as a vehicle to disseminate research since the early 2000s. Cancer Research UK (2017), the National Institute of Health (2017), and the Wellcome Trust (2017) are other funding agencies that permit scholars to cite preprints, or pre-peer reviewed manuscripts in their grant applications and end-of-grant review reports—thereby empowering scholars to communicate their research findings more quickly.

Despite these pockets of innovations, the academic landscape has seen little change in tenure and promotion policies and procedures. According to Weller (2011) scholars continue to face challenges when attempting to use technology to transform scholarly practice. Some early career faculty are reluctant to pursue new approaches because of concerns for how their work may be “acknowledged, valued, and rewarded” within established tenure and promotion reward systems (American Historical Association Working Group on Evaluating Public History Scholarship, 2010; Bartanen, 2014, para. 2; Galarza et al., 2012; Presner, 2012; Weller, 2011, p. 128). This fear is further reinforced by senior academics who advise younger faculty to concentrate on traditional and more recognized paths or “right venues” for publishing (Harley et al., 2010, p. 10). Some of these senior administrators and faculty are also not disposed towards using new technologies, due to their lack of understanding of the tools and more importantly, that they themselves were successful working within the traditional model (Weller, 2011, pp. 130-131).

These new and emerging scholarly communication and publishing practices have not pressured university administrators to move beyond *dated* traditional measures for peer review. Tenure and promotion committees across higher education institutions have continued to rely on benchmarks and methods for assessment based on an over reliance on a single measure of scholarly productivity (a book or article) or output produced by one individual scholar or scholar collaborators (Ardis et al., 2011;

Nowvskie, 2011, p. 169). The resulting disconnect between traditional evaluation processes and procedures and emerging scholarly communication and publishing practices leaves early career scholars in a very risky situation. Dividing their limited time and attention on new methods typically—in the eyes of some administrators—is not on par with traditional scholarly outputs (Galarza et al., 2012).

Administrators and tenure and promotion committees have made little concerted effort to re-imagine assessment practices that are applicable to the new forms of digital outputs (e.g., tools, websites, ontologies, data models, etc.) and processes (Smithies, 2012). Presner (2012) and Priem (2013) noted that experimentation and risk-taking in scholarship “represent the best of what the university ... has to offer society. To treat scholarship that takes on risk and the challenge of experimentation as an activity of secondary (or no) value for promotion and advancement, can only serve to reduce innovation, reward mediocrity, and retard the development of research” (Presner, para. 10). Evaluators of peer review will require guidance and criteria for evaluating and rewarding scholarly communication and publishing practices that not only cross boundaries between research, teaching and service, but are also multidisciplinary, interdisciplinary, and transdisciplinary in nature. Open scholarship practices demand a re-imagining of not only what constitutes scholarly work, but also appropriate criteria for assessment. Finding equitable and flexible ways to assess and credit publicly engaged researchers will benefit all scholars and their respective institutions.

Re-Defining Tenure and Promotion: Organizational Leadership

Professional Scholarly Associations

Next, I documented benchmarks for tenure and promotion evaluation issued by some professional scholarly associations in North America. Professional associations are nonprofit organizations that further the interests of scholars engaged in open/digital/public scholarship. In essence, they function as a self-regulatory board for the profession. These professional bodies have the

power to advocate for change in institutional tenure and promotion practices and procedures on behalf of their members—to provide options/strategies for higher education institutions considering a more open culture and the inclusion of alternative forms and venues/channels for the dissemination of scholarship. Moreover, scholarly professional associations provide a much-needed avenue where scholars could bring forward suggestions for change.

For example, a key function of the Canadian Association of University Teachers (CAUT), a national body representing over 70,000 teachers, librarians, researchers, and academic professionals at about 122 universities and colleges in Canada, centres on the principles linked to the tenure and promotion process at Canadian universities. In its updated policy statement on renewal, promotion, and tenure (RPT) the CAUT advises academic associations negotiating collective agreements to ensure that in “career decisions priority was given to academic judgements and peer review while protecting the member’s right to fair, consistent and equitable treatment” (2020, November). Their review, promotion, and tenure policy specifies that collective agreements provide:

1. reasonable criteria and standards which acknowledge the diversity of scholarship, and which avoid difficult to interpret qualifiers such as “excellent” in favour of descriptions of tasks such as “has established a record of independent scholarship”;
5. evidence-driven decision-making which relies exclusively on relevant material provided by the applicant;
8. a requirement that all persons charged with assessing the academic work of a member and/or making a recommendation or decision have appropriate training on the application of the collective agreement, and relevant equity and other policies;
9. a requirement that all persons charged with assessing the academic work of a member and/or making a recommendation or decision have demonstrated competence and knowledge relevant

to the assessment and act impartially, without bias and with no conflict of interest. (paras. 3, 5, 8, 9)

CAUT's policy statement on equity (2018, November) acknowledges the shortcomings existing in the higher education environment where

systemic discrimination has manifested itself in barriers to access, employment, governance, inclusion, respect, and acceptance. The result has been that particular forms of knowledge production, dissemination and pedagogy have been privileged over others, a practice that has limited scope of academic freedom and scholarship. (para. 2)

In addition, the policy takes a stance on the assessment of scholarship for career decisions:

Recognition must be given to different and diverse experiences of marginalized groups. Diverse substantive contributions to knowledge must be welcomed in the university or college. Diversity demands representation of difference in terms of vision, values, cultural mores, lived experience, methodologies, and epistemologies in critical analysis. (para. 5)

Unfortunately, CAUT's RPT policy does not broaden its advice to include examples of types of publications formats or venues for the dissemination of scholarly outputs. They leave much of this interpretation in the hands of university administrators, faculty associations, and departmental tenure and promotion committees.

The Modern Language Association (MLA), National Endowment for the Humanities (NEH), American Historical Association (AHA), American Anthropological Association (AAA), American Academy of Religion, among others have undertaken significant efforts to advance the dialogue pertaining to new and emerging scholarship practices occurring in the digital environment. According to Nowvskie (2011), a singularly important role they play in the evolving scholarly communication landscape is in hastening

the “regularization of fair and productive evaluation practices among institutions of higher education” (p. 3). Information gathered from these associations was organized into the following categories: transformation of scholarship and publication types; community engagement/public scholarship activities; criteria for assessment; and contributor roles.

Transformation of Scholarship and Publication Types.

In its *Guidelines for Evaluating Work in Digital Humanities and Digital Media*, the MLA’s Committee on Information Technology (2012) acknowledges that digital media are transforming literacy, scholarship, teaching, and service, as well as providing new venues for research, communication, and the creation of networked academic communities ... [and that] digital media have expanded the objects and forms of inquiry of modern language departments to include images, sounds, data, kinetic attributes like animation, and new kinds of engagement with textual representation and analysis.... User-generated content produces a wealth of new critical publications, applied scholarship, pedagogical models, curricular innovations, and redefinitions of author, text, and reader. (para. 2, 3)

The Conference on College Composition and Communication (CCCC) Committee on Computers and Composition (2015, November) and the American Academy of Religion (AAR, 2018) derived their guidelines for promotion and tenure from the Modern Languages Association, and the American Historical Association (2015). Digital media have not only transformed the way we disseminate research, but the way we discover and interpret research (AAR, para. 1).

The American Historical Association (AHA, 2015) incorporates the following scholarly forms in its guidelines for evaluating digital scholarship: “short form genres such as blogs, social media or multimedia storytelling, developing and using new pedagogical methods, participating in strong activist forms of open-access distribution of scholarly work, or creating digital platforms and tools as alternative

modalities of scholarly production” (p. 2). They encouraged departments to determine how they responded to the opportunities and challenges presented by the emerging digital environments.

In another example, the College Art Association (CAA) and the Society of Architectural Historians (SAH) joint task force developed their *Guidelines for the Evaluation of Digital Scholarship in Art and Architectural History* (2016) and expanded their definition of digital scholarship to include new tools, methodologies (purpose, digital forms, and process), and channels and formats for dissemination in art and architecture. Their definition of “publication” includes research methods that use “digital technologies in different ways and to different purposes” (p. 5).

The American Association of Applied Linguistics’ (AAAL) *Promotion and Tenure Guidelines* (2019) give us more viewpoints for deliberation. They accept a variety of publication formats: articles, book, book chapters, non-refereed publications, textbooks, grants, keynote, plenary, and conference presentations. Unfortunately, the AAAL relegates any outputs issued via mass media or social media (e.g., public talks, interviews, YouTube presentations, blogs, Wikimedia entries, etc.) to the category of ‘community engagement’ and under *service*. The Linguistics Society of American (LSA), on the other hand, expresses support for the recognition of language documentation as a scholarly output in the RPT evaluation process (2018), and includes “not only grammars, dictionaries, and text collections, but also archives of primary data, electronic databases, corpora, critical editions of legacy materials, pedagogical works designed for the use of speech communities, software, websites, or other digital media” (para. 1). The LSA’s most recent and expanded statement (2021) encompass and values open scholarship in the evaluation process to—“increase impact, better reliability and reproducibility of research, and improved opportunities for collaboration” (para. 5). As a signatory of DORA they recommend that

Scholars who practice Open Scholarship need to be ‘allowed and likely encouraged to produce other types of outputs beyond the six traditional outputs ... and ‘for the public availability of these and other outputs to be valued, that too may need to be explicitly rewarded’.

Community Engagement/Public Activities.

Recently, MLA’s Ad Hoc Committee on Valuing the Public Humanities released its new *Guidelines for Evaluating Publicly Engaged Humanities Scholarship in Language and Literature Programs* (2022, August) acknowledging the importance of scholarship that reaches and involves engagement with communities beyond the university. Scholarship in this area, according to the committee, could take many forms:

writing about one’s research in magazines or op-eds, producing a podcast, contributing to a blog, collaborating with a community, developing an exhibit, or leading reading groups at a library.... Community events, such as speaker series or heritage sites ... websites, or apps, ... development of archives ... digital stories, exhibitions, and datasets. (pp. 3, 4)

In 2015, the AHA ad hoc committee not only examined work that could “be seen as analogous to print scholarship ... but also the myriad uses of digital technology for research, teaching, pedagogy, and even some that might be described as service” (p. 1). Their *Guidelines for the Professional Evaluation of Digital Scholarship by Historians*, offers a “broad working definition of digital history” as “scholarship that is either produced using computational tools and methods or presented using digital technologies” (p. 1). Scholars could turn to digital media to “support a communicative transformation” and to connect “historical scholarship with the ways in which wider publics memorialize, represent, and engage history” (p. 2). The American Anthropological Association’s (AAA) *Guidelines for Tenure and Promotion Review: Communicating Public Scholarship in Anthropology* (2017) similarly defines public scholarship as a dialogue with non-academics and academic audiences (p. 1).

Criteria for Assessment.

In light of this transformative technological and intellectual environment, the MLA committee encourages institutions and departments to develop guidelines that fairly evaluates and proportionally rewards “faculty members who create, study, and teach with digital objects; engage in collaborative work; or use technology for pedagogy” in all areas that cross the traditional boundaries of scholarship (2012, para. 4). In addition, the committee recommends that review and evaluation of public humanities involving “community partners and other stakeholders outside conventional academic or scholarly structures,” be “distinct from traditional forms of peer review” and states that alternate publication formats may be read more widely and have a greater impact than those measured by the “prestige of the venue” (pp. 3, 4). Furthermore, they advise evaluation committees seek qualified expert reviewers who are “knowledgeable about the use and creation of digital media in a given faculty member’s field” (para. 6), and to review faculty members’ work in the medium for which it is produced. MLA’s Ad Hoc Committee on Valuing the Public Humanities (2022, August) provides guidance in the form of “questions that drive a peer review process ... and to suggest alternative modes of peer review,” including the: “scope and impact of project”; “form and dissemination of the project”; “extent of existing deliverables”; and “nature and extent of the collaboration” (pp. 2, 4-5). In applying revised criteria for evaluation, the AAAL (2018) moved away from only including quantity of publications and venue to alternative forms of assessment.

Correspondingly, the association’s *Guidelines for Authors of Digital Resources* (2013) offers a best practices approach for scholars who create digital resources—they stress the importance of documenting their role/contribution in the creation, development and support of a digital project, describing the process underlying the creation of the work, and the utilization of collaborative relationships to produce the work. They also recommend that authors provide minimal information for discoverability of their digital projects, namely: authorship and credit, citations and reuse, accessibility,

metadata, structure and style, a privacy statement, and an adherence to institutional and statutory privacy guidelines. Collectively, the MLA's guidelines not only offer standards for adoption by tenure and promotion committees, but also examples for scholars on documenting success or impact of a project.

Likewise, the AHA's ad hoc committee recommends that historians working in digital environments be "evaluated in terms of their overall ability to use sustained, expressive, substantive, and institutional innovation to advance scholarship" (2015, p. 2). Tenure and promotion committees, the AHA states should:

- evaluate digital scholarship in its "native digital medium" and not printed out to be included in a portfolio;
- consider the development of sophisticated digital tools, work in a digital medium that exists in a process of continual revision, and collaborative work; and
- enlist experts in particular forms of digital scholarship to assist with the evaluation process. (p. 3)

The American Anthropological Association's guidelines (2017) also recognizes the need for new ways of assessing and evaluating new forms of producing and disseminating scholarship in anthropology ... [and] acknowledges the importance of these new, public forms of peer-reviewed, editor-reviewed and non-peer-reviewed scholarship, as well as the ways they add to and complement traditional peer-reviewed publication of articles and books. (para. 2)

Their recommendations include the following considerations:

- "what counts for excellence ... as well as expectations for communicating research with different publics" (e.g., design, content, reach, contributions to the profile of scholar, peer reviews of individual/portfolio of works);

- both “quantitative (metrics, such as unique site visits, page views, citations, etc.) as well as qualitative (author reports on responses, faculty assessment of the publication venue; peer reviews of individual works or of a portfolio of work), and include considerations such as invitation-only publications”;
- seek qualified reviewers for scholarship – “seeking letters from external communities and individuals might be an important supplement to the traditional outside academic reviewers (e.g., members of Tribal Councils, community organizations, government representations, etc.)”; and
- ensure a “fair balance of expectations across all forms of academic work.... new forms of communicating anthropology cannot become additive to traditional responsibilities but requires a new balance of weights across publishing, teaching, service, and leadership.

The College Art Association and the Society of Architectural Historians (2016) jointly emphasize the importance of “process” in digital work and stress the need to evaluate all aspects—creation, development, and product. They provide criteria for evaluating digital scholarship and suggest that the value of contributions be assessed with “sensitivity to the particular demands and opportunities of a collaborative approach” (p. 9) and that the roles and responsibilities for each collaborator be explained. Most importantly, they acknowledge that collaborative work takes “more time than a single-authored work” (p. 10).

The Linguistics Society of America similarly acknowledges the “heavy time commitment” of documentary scholarship and notes that this type of output is not “ordinarily peer-reviewed” (2018). As a proud signatory of DORA (2012), they do, however, suggest that RPT committees “consider the value and impact of all research outputs,” as well as a broad range of impact measures that include “qualitative indicators of research impact, such as influence on policy and practice” (p. para. 2).

Contributor Roles.

While the issue of single authorship on a paper is virtually non-existent in the sciences, it is still a traditional practice in the arts, humanities, and the social sciences. What registers as perplexing when reading a science paper is that we currently cannot determine contributor roles—that is, who did what? Neither are there structured formats to credit individuals “during the process of developing and publishing a paper” (Allen et al., 2014, p. 312) across the disciplines. Allen et al. posited that “for researchers, the ability to better describe what they contributed would be a more useful currency” (p. 312) especially junior scholars “for whom the opportunities to be a ‘key’ author on a paper can prove somewhat elusive” (p. 312). The *Collaborators Bill of Rights* (Media Commons Press, 2011), endorsed by participants at an National Endowment for the Humanities funded workshop, furthers the discussion on the requirements for assessing digital work and offers details needed for crediting co-collaborators appropriately. In 2012, Harvard University and the Wellcome Trust hosted a workshop, in partnership with a group of publishers, members of academia, and funder communities, to explore alternative contributorship and attribution models. A pilot project was established to develop a high-level contributor taxonomy for the sciences (Brand et al., 2015), and based on the success from this work, the group partnered with two information industry standards organizations—the Consortia Advancing Standards in Research Administration Information (CASRAI) and the US National Information Standards Organization (NISO)—to “achieve broader community consultation in refining the taxonomy and testing its fit with a range of scientific fields” (Brand et al., 2015, p. 154). The final contributor taxonomy version, known as CRediT (Contributor Roles Taxonomy) was adopted by a wide range of publishers (Allen et al., 2014; Consortia Advancing Standards in Research Administration & National Information Standards Organization, 2014). It may also be expansive enough for application in the humanities and social science disciplines. See Appendix I for the list of contributor roles and contributions.

Though the professional associations listed above issued broad and sweeping recommendations for updating tenure and promotion evaluation practices, these recommendations have unfortunately not been widely adopted within academia. Professional associations need to take a stand, on behalf of their membership, to push administrators and tenure and promotion committees in higher education to consider strategies for implementing procedures that included both traditional and non-traditional scholarly outputs, and quantitative and qualitative evaluative measures. The next section introduces some examples of universities that have taken an enlightened approach to create and reconfigure structures and policies to support faculty in their engagement with new forms of scholarly communications and publishing practices.

Universities

Evidence from the Registry of Open Access Repositories Mandatory Archiving Policies (ROARMAP) indicates that the higher education sector has been transitioning towards greater access to research and research data outputs. Figure 3.5 shows the growth, since 2005, of “open access mandates adopted by universities, research institutions and research funders that require their researchers to provide open access to their peer-reviewed research article output by depositing it in an open access repository” (ROARMAP, n.d.).

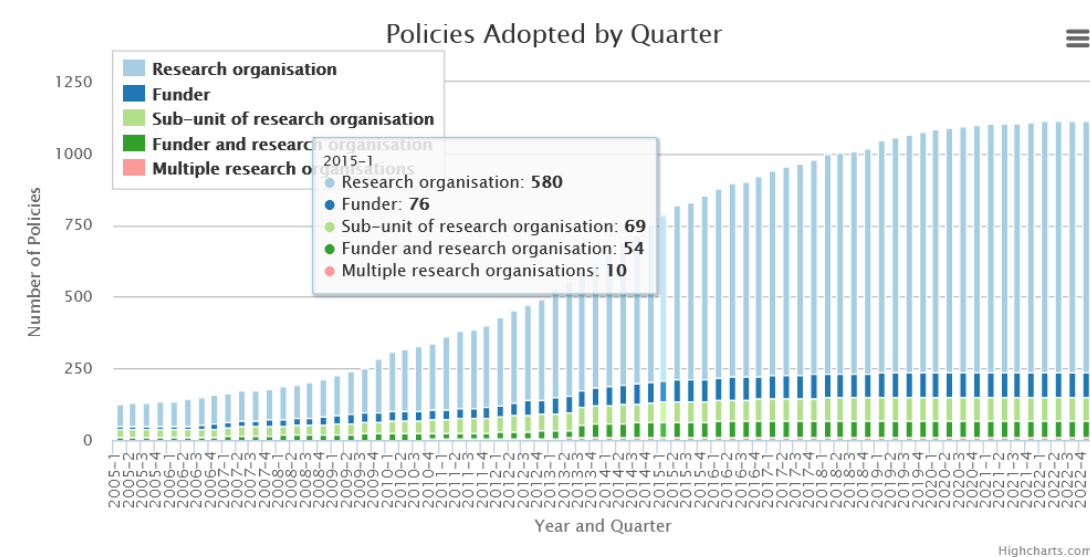
For example, the University of Stirling (2014) adopted an open access data management policy with the following statement:

We recognize the benefits of free and open access to publicly-funded research to the economy, to society and to the pursuit of academic excellence. We support the principle that research outcomes should be made freely and publicly available. Therefore, Stirling is committed to disseminating the outputs from research generated at the University.

(2014, para. 1)

Figure 3.5

Policies Adopted Worldwide by Quarter Since 2005



Note. From the School of Electronics and Computer Science. (n.d.). *Registry of open access repository mandates and policies (ROARMAP)*. University of Southampton.

For example, the University of Stirling (2014) adopted an open access data management policy with the following statement:

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Their Open Access and Article Processing Charge Policy, which was recently renewed, continues to recognize the benefits of open access publishing (2023). Meeting UK's Research Innovation (UKRI; formerly Research Councils UK) requirements is essential for continued funding to UK universities and a lack of compliance affects potential income received from other funding sources. In 2007, the University

of Liège in Belgium not only adopted an immediate self-archiving mandate which requires all researchers at the university to deposit their articles in the university's institutional repository, but to further motivate compliance, Rector, Bernard Rentier, linked the deposits of papers in the repository to performance evaluation (Poynder, 2011).

In February 2009, several provosts, chief research officers, chief information officers, senior faculty, as well as library and university press directors in North America (Association of American Universities et al.) identified actions related to the dissemination of scholarly outputs. First, they acknowledged the academy's "responsibility to ensure the broadest possible access to the fruits of its work ... by publics both local and global," and its past and current reliance on "formal publication systems to ensure dissemination and their critical function in vetting new scholarship" (p. 1). Additionally, they issued a call for a broader range of dissemination options and offered several key institutional strategies related to tenure and promotion policies and practices:

- Charge a campus task force to advise the provost on "key issues raised by the emergence of new forms of scholarly publishing and the gains that might be had by utilizing more effective ways of sharing the high quality results of the processes of scholarly and creative endeavor";
- "[D]evelop priorities for supporting new dissemination strategies that enhance the value of the multifaceted investments in faculty research and scholarship by promoting the broadest possible access to it"; and
- "[E]ngage departments on campus in developing fresh articulations of the criteria that are appropriate for judging the quality of contributions to their discipline, criteria that embrace emerging forms of scholarly work, where those possess the

same attributes of quality and contribution to new knowledge, and do not rely solely on traditional publications and historic practices.” (p. 4)

A few years later, 11 provosts (Wheeler et al., 2012) from the large research universities in the United States issued a similar declaration for the open sharing of information. They called on senior campus administrators and faculty leaders to ensure “that promotion and tenure review are flexible enough to recognize and reward new modes of communicating research outcomes” (para. 11). Likewise, in Canada, the Group of Canadian Research Universities known as the U15, released a *Statement on Sustainable Publishing* (2017) emphasizing that

[a]ccess to research and scholarly outputs is essential for scientific discovery, innovation, and education. To maximize knowledge transfer and impact, our researchers’ work must be made readily available around the globe. Research-intensive universities also require timely and continuing access to international research results and scholarship in order to advance and disseminate knowledge, and to develop the next generation of researchers. (para. 1)

The group not only shared similar concerns regarding the “necessity for an accessible and sustainable model of scholarly publishing,” they:

- committed to the “widest possible access to research and scholarly outputs ... to maximize their economic, cultural, social and health benefits, and the effectiveness of public investments in research”;
- supported “rigorous peer-review processes and effective research impact measures” for all forms of scholarly outputs and;
- encouraged the “collaborative development of new models of scholarly communications that would benefit the academy and the public by leveraging the power of the digital age in ways that enhance the quality of scholarly and scientific publications.” (paras. 2-4, 6)

With evidence of these broad statements around open access, public interest, quality, accountability, and innovation in scholarly communication and publishing practices expressed at the international and national levels, I turned to Canada's higher education landscape to uncover cases where these principles had been implemented.

As documented in the Open Scholarship Policy Observatory blog (2021), 14 Canadian universities (i.e., Acadia University, Athabasca University, Brock University, Carleton University, Concordia University, Mount Saint Vincent University, Simon Fraser University, TÉLUQ, University of British Columbia, Université Laval, University of Lethbridge, University of Prince Edward Island, University of Windsor, and York University) took a leadership role in supporting the principles of open access by passing Senate or Board of Governors resolutions. Scholars at these institutions are encouraged to “deposit an electronic copy of their refereed research output and creative work in [the institutional repository], along with a non-exclusive permission to preserve and freely disseminate it” (Concordia University, 2010, para. 3). In addition, ten university libraries—strong advocates of open access and open scholarship initiatives themselves—issued parallel statements of commitment (para. 4). Although these open access initiatives are great exemplars for emulation, the ultimate test is “buy-in from faculty” (Chan, as cited in Lorinc, 2010, para. 6), and whether, in time, open scholarship practices will transform educational institutions. There is evidence to indicate we have achieved marginal success in making research publicly accessible. A Tri-Agency internal study tracked the amount of publicly funded research that was made open access and found that in 2018, the rates were: CIHR-66%, NSERC-46%, and SSHRC-40% (Government of Canada, 2024). These results were comparable to the open access rate (44%) reported by Paquet et al. (2022).

Although there are examples of open access mandates at the institutional level and discussions in the literature and at recent conferences outlining guidelines for evaluating new forms of scholarship,

very few examples of implementation into campus tenure and promotion processes exist (Alperin et al., 2019; Bartanen, 2014, para. 10; Cavanagh, 2012). McDougal and Moore (2012) found that even though

institutional research offices may encourage non-traditional impacts of scholarly research, academic departments may not recognize these efforts as important ... [since the] decentralized promotion and tenure process in place ... allows each academic department to interpret the institutional guidelines differently and potentially impose stricter criteria. (p. 12)

Thus far, only some institutions have incorporated specific evaluation guidelines for crediting the non-traditional alongside traditional publishing practices and outputs. The first set of examples are from select institutions in the United States (US):

- In their guidelines for evaluating faculty, the University of Maine's New Media department (2017), recognizes the value of new and innovative electronic formats, and in directed research where "faculty involved students in outside collaborations for artistic or commercial purposes" (Teaching and Instructional Activities, Section B). Publication (in applied or research aspects) venues are not limited to the traditional channels (books, book chapters, and edited volumes, journal articles, essays, technical reports and book reviews, editorials, working papers, managing discussion lists, etc.), creative activities (exhibitions, performances, installations, creative writing and poetry, etc.), articles in blogs, networked reports, coordinating multi-use-user discussion lists, as well as, conference presentations, and posters. Recognition for "in press" articles and interviews indicate influence, while citations to specific projects document their relevance and achievement. It is important to note that departmental evaluation criteria is accessible (and transparent) to all and cited on the University of Maine's website (Office of the Executive Vice President for Academic Affairs & Provost, 2017).

- The University of Nebraska-Lincoln's Center for Digital Research in the Humanities (n.d.) includes a definition for digital scholarship, as well as succinct standards and criteria for evaluation available to both scholars and tenure and promotion committees. The types of criteria posited for evaluation parallels Rockwell's (2012) "checklist" for assessing digital work. They reference the guidelines and recommendations offered by the professional associations (American Historical Association Digital History Working Group, 2015; American Historical Association Working Group on Evaluating Public History Scholarship, 2010; College Art Association & Society of Architectural Historians, 2016; Modern Language Association Committee on Information Technology, 2012) in their documentation.
- Purdue University's guide for evaluating and recognizing engaged scholarship (2001, 2019), captures a scholarly agenda that incorporates "community issues which can be within or integrative across teaching, research and service ... [and] community being broadly defined to include audiences external to the campus that are part of a collaborative process" (para. 2).
- In 2015, Indiana University-Purdue University's (IUPUI) Office of Academic Affairs developed policies that include open access scholarship in its tenure and promotion process: they are "committed to disseminating the fruits of its research and scholarly activities as widely as possible and as such supports faculty participating in digital open access distribution of their scholarship" (Odell et al., 2016, p. 322). The University's modified tenure and promotion guidelines include criteria for publicly engaged scholarship and a DEI-focused framework that integrates research, teaching, and service (Office of Academic Affairs, 2021). The document also includes definitions that differentiate scholarly (peer reviewed dissemination and a variety of venues for dissemination) and local impact (DEI work demonstrating distinct outcomes, tied to mission statements at departmental to university levels).

- The University of Virginia (2001), University of Southern California), and Emory College (2013) also incorporated evaluation guidelines for digital scholarship.
- University of Maryland’s Department of Psychology adopted new tenure and promotion guidelines (2022) that rewards “faculty members ... who perform and disseminate research in accordance with open science practices.... Michael Dougherty, chair of the department [indicated that] ‘Making our work as accessible as possible, with as few barriers as possible, has to be a cornerstone component. You can’t conceive impact without access’”(Tananbaum, 2022, para. 1, 4). The document begins with overarching principles including, the procedures and criteria that: “accommodate and capture modern approaches to scholarship and research”; value the difficulty of doing work with “hard-to-reach populations, community engaged work, and/or approaches to open science”; and “recognize the multitude of research products that people produce as part of their research program” (University of Maryland, 2022).

In 2009, the Australian Research Council (ARC) first recognized “non-traditional research outputs (NTROs) as valid expressions of research and developed benchmarks to measure the quality of *artistic* research. Using the framework and terminology developed by the ARC, the University of Sydney (2021) in turn developed and adopted its *University Guidelines for Non-Traditional Research Guidelines*. According to the guidelines, NTROs “may consist of any form of publicly available, assessable materials embodying research, whether produced by writing, making, composing, designing, performing, or curating” (p. 1). Research in this category is defined in the same way as traditional outputs—“the creation of new knowledge and/or the use of existing knowledge in a new and creative way, so as to generate new concepts, methodologies, and understandings in the relevant discipline area(s)” (p. 1). The guidelines support the creative works emerging from the fine arts disciplines, namely creative works in architecture, visual arts, and musical composition, live performance, recorded/rendered works (e.g.,

performances and live performances of original works, audio/visual recordings, digital, and web site/exhibitions), curated/produced exhibition/events, and research reports for an external body. The guidelines also include detailed criteria and output weightings for each type of NTRs. Similar guidelines are adopted at academic institutions in Australian and New Zealand.

In Canada, the University of British Columbia (UBC), reached beyond policy statements and incorporates open criteria (both open access and open scholarship) into its *Guide to Reappointment, Promotion and Tenure Procedures* (2023), and advised teaching faculty about assembling evidence for scholarship of teaching where:

scholarly activity may be evidenced by factors such as originality or innovation, demonstrable impact in a particular field or discipline, peer reviews of scholarly contributions to teaching, dissemination in the public domain, or substantial and sustained use by others. For example, textbooks and curriculum reform that changed academic understanding or made a significant contribution to the way in which a discipline or field is taught might constitute useful evidence of the scholarship of teaching. (Article 3.1.9)

Furthermore, they incorporate language recognizing contributions in the area of open education:

Evidence of educational leadership is required for tenure/promotion in the Educational Leadership stream.... It can include, but is not limited to.... Contributions to the practice and theory of teaching and learning literature, including publications in peer-reviewed and professional journals, conference publications, book chapters, textbooks and open education repositories/resources. (Article 3.4.1)

This change, strongly supported by UBC's student government advocacy, is an example of how higher education institutions can incentivize open practices in tenure and promotion policies recognizing faculty who engage in open education activities. It sets the institution's commitment

to not only open educational practices but open practices in general that benefit both the institution and society (Yano, 2017).

The University of Alberta's Research Policy Committee (URPC) (2020) endorsed a *Statement of Research Impact for Research and Innovation* that aligns very closely with campus-wide initiatives and efforts, including but not restricted to efforts to: foster innovation, commercialization, entrepreneurship; promote equity, diversity, and inclusion (EDI); express the principles of the Truth and Reconciliation Commission of Canada; and ensure higher and more equitable access to research data and publications.

(p. 3)

Most importantly, the URPC created three principles to guide researchers, Review and Promotion Committees, and university administrators:

1. Research impact must be defined broadly

For impact assessments, we agree with Canada's national research funders that the quality and impact of research cannot be measured by journal publications alone.

Approaches to assessing research impact must be open to the distinctive contributions of all types of research and scholarly creative practices. This could include variations in the form and content of research outputs that are considered, such as: publications in scholarly and professional journals, scholarly monographs and books, innovation, commercialization activities, contributions to academic and professional conferences, professional and policy reports, public dissemination, knowledge translation activities, exhibitions, and creative performances, among others.

2. Academic, social, and economic research impacts should be valued

To promote inclusivity and greater equity, research impacts that are valued at the University of Alberta should extend across a wide scope of research and innovation.

3. Research impact should be assessed credibly using qualitative and quantitative indicators.

Due to well-documented systemic deficiencies and biases in this approach, decision-making that uses research impact assessments as a data point should not rely on such measures alone. Our merit reward systems shape not only the research activities of the institution but also the community cultures within the institution and its interactions with our wider communities.

It is crucial that we adjust merit reward systems to align incentives and the resulting activities more towards behaviours that increase the full range of research impacts. This will strengthen our internal research communities.

Consequently, we encourage openness to valuing a range of types of research impact and broad diversity of qualitative and quantitative approaches to assessing impact credibly and fairly. (pp. 2-3)

As a recent signatory of DORA (2021), the University of Calgary is committed to changing how the university assesses research and scholarship activities; “focusing on research content and impact, rather than on bibliometric alone” (University of Calgary, 2024b, p. 9). They have integrated the DORA guidelines academic progression within the ranks (renewal, tenure, promotion, and merit assessment).

Finally, I would like to note that the University of Victoria (UVic) Faculty Association was successful in its efforts to negotiate new and progressive language in its 2019 collective agreement for both the evaluation of teaching:

f) evidence of innovative teaching, including research-enriched, Clinical and/or community engaged teaching on behalf of the University including, but not limited to: creative and artistic works, productions and performances, web publishing, including the production of archives and blogs, and use of on-line teaching contexts. (2019, pp. Section 25.27, 46)

and research:

- a) peer-reviewed publications and scholarly papers, especially insofar as they reveal the quality of Research, including alternate and emerging forms of Scholarship and digital contexts;
- b) other forms of creative achievement in areas that are directly relevant to a Faculty Member's discipline;
- d) documented activities and outputs related to community-engaged [s]cholarship, including the development of long-term relationships with communities. (Section 25.9, p. 47)

Furthermore, most higher education institutions have extended this commitment to graduate theses and dissertations; they make the submission of these research outputs mandatory with a deposit into the institutional repository. UVic, for example, includes an official statement in the university calendar for the mandatory submission of Theses and Dissertations in its institutional repository:

The results of research conducted at the University of Victoria are required to be made available to the public in a timely fashion, and so theses and dissertations must be placed in the institutional repository, UVicSpace, immediately following submission of the thesis/dissertation approval form. (2018)

Emerging forms of scholarship will not, however, be fully valued in the tenure and promotion process while university administrators and members of tenure and promotion committees continue to assert the importance of metrics within particular disciplinary areas (Alperin et al., 2018). Many universities have yet to see expansive changes to tenure and promotion policies and guidelines at higher education institutions. Bartanen (2014) argues that “[i]n order to support and reward appropriately such scholarship, evaluators need guidance on how to assess such boundary-crossing work and on what standards account for the scholarly work involved in learning or building new technologies tools and archival resources” (para. 6). To counter the diminishment in application, McDougal and Moore (2012) suggest that tenure and promotion committees be composed of members who have expertise in non-traditional scholarly activities and that committees “gather evaluation letters from external peers that describe the importance of any non-traditional activities” (p. 12).

Implementing change in academic institutions, however, typically moves at a snail’s pace; this is one area in which timeliness for determining criteria and process for evaluating alternative scholarly communication and publishing practices appears crucial (Daniels & Thistlethwaite, 2016). At the same time, it is apparent that reimagining a peer review structure that includes alternative or non-traditional publishing practices alongside traditional publishing practices, is not a simple process. Acknowledging and assessing alternative publishing practices could take a variety of approaches. James Smithies (2012), for example proposes a broad framework of five standard layers for evaluation, based on five levels of independence or inter-dependence with others, in building the digital ecosystem for a project (i.e., content, technical design, project management—phasing for the project, content inclusion, external funding, assessment, dissemination, standards, and preservation). At all levels, the scholar has significant input into the content, allowing for variations in the level of engagement with technical design, standards, and preservation for the project. Smithies cautions the use of one standard of evaluation for all digital projects or objects.

Crissinger, on the other hand, contends that a scholar's online presence is "undeniably linked to that scholarship" and anyone attempting to change the tenure and promotion culture should consider a portfolio model so that the digital work and the social media presence is measured (2014). Other scholars (Ippolito et al., 2009, pp. 73-74; Rockwell, 2012) offer competitive funding and invited presentations for consideration. Presner (2012), Rockwell (2012), Mandell (2012), Anderson (2004), the NINES/NEH Summer Institute (Ardis et al., 2011), Coletta et al., (2011), and Weller (2011), among others propose specific evaluation criteria that could be mapped under Smithies broad digital ecosystem framework. A summary of assessment criteria (by no means exhaustive) for evaluating publishing outputs, drawn from proposals put forward by practitioners in the field, professional associations, as well as participants in my research study is included in Chapter 5.

Practitioners and professional associations suggest an expansiveness in the interpretation of the "quality of results" that appreciate fluid production, publication and reception venues, and the engagement of colleagues from a multiplicity of units in collaborative roles. Cavanagh (2012) notes, however, that guidelines for the assessment of alternative publications outputs and venues rarely exist for junior faculty, pushing them to postpone creative endeavours of this nature until after tenure. The author challenges senior faculty to acquire the knowledge needed "in order to bring promotion and tenure criteria into alignment with technological, material, and philosophical changes in the intellectual marketplace" (para. 29). As the MLA's Committee on Information Technology (2012) guidelines for evaluating digital scholarship suggests, credit may need to be allocated unconventionally, and that, institutions

take care to grant appropriate credit to faculty members for technology projects in teaching, research, and service. Because many projects cross the boundaries between these traditional areas, faculty members should receive proportional credit in more than one relevant area for their intellectual work. (para. 4)

A greater understanding of scholars' current and emerging scholarly publishing practices would assist university administrators understand the issues in order to not only, make informed decisions around policy and practice—requiring potential new frameworks for the evaluation of traditional and alternative scholarly publishing practices together—in order to understand their impact on teaching, learning and research in higher education and the general community.

Chapter Summary

In this chapter, I have provided a summary of studies examining scholarly communications and publishing practices, trends of open scholarship in praxis, the debate on its impact on scholarly rigour, and some new criteria proposed by scholars, some scholarly associations in the humanities, and implemented at select universities. In the next chapter, I will present the methodological framework used in this study and describe the two study phases in more detail, including the methods and approaches I took during each phase of this research.

Chapter 4:

Methodology

In this chapter, I begin with a discussion on the methodological approach that guided the two phases of the research study: (a) an online survey of faculty and subsequent in-person semi-structured interviews with volunteers from the survey group, and (b) a review of a sample set of primary documents related to tenure and promotion at a large research university in Western Canada (University). The two study phases provide a holistic view of faculty scholarly communication and publishing practices and the established evaluation practices across disciplines, at a single research institution. Included in the account are the methodological framework that I employed, reasons for a mixed methods research approach for the study, my researcher and epistemological orientation, and an explanation of the ethical considerations. The chapter concludes with a description of the approaches for data collection and analysis for each mixed method utilized (online questionnaire, in-person semi-structured interviews, and content analysis of primary documents) in the study.

Methodological Framework

I employed a phenomenographical approach to acquire a subjective understanding of the impact open scholarship practices have had on academic scholars employed at the University. Faculty at this University are engaged in a significant amount of research and teaching activities and the institution offers a wide range of programs at the undergraduate, graduate, and professional levels. I was specifically interested in:

- the types of publishing practices faculty intentionally adopted and reasons for adopting these practices,
- the challenges faculty faced in disseminating research using new and emerging forms of scholarship, and

- faculty perceptions of the impact these practices have had on tenure and promotion processes and decisions.

Furthermore, I wanted to explore the extent to which existing University's benchmarks (i.e., tenure and promotion documents) supported traditional and new, open/alternative scholarly practices in research and teaching.

Phenomenography as a research approach was originally conceived in 1979 by Marton and colleagues at the University of Gothenburg, Sweden (1986, p. 289). As a research approach, phenomenography is used for mapping "different ways in which people experience, conceptualize, perceive, and understand various aspects of, and phenomena in, the world around them" (p. 31). According to Limberg (2008) and Feldon and Tofel-Grehl (2018), the researcher studies variations of human experiences of a phenomena, and the approach emphasizes "personal conceptions as a necessary construct to understand the relationship between physical events that people experience and the personal meanings that they derive from those experiences" (Feldon & Tofel-Grehl, p. 887). Each individual, the authors state, will "notice, prioritize, and place value on different aspects of an experience" (2018, p. 888), thereby merging the phenomena (objects) and a person's perception of that event. As a methodological approach, Feldon and Tofel-Grehl contend that it "naturally lends itself to the meaningful integration of quantitative and qualitative methods" (p. 887).

Given the goal of my research, the phenomenographical approach has relevance. This approach stresses "a useful foundation for developing validity constructs that are meaningful across a wide range of mixed research ... [and] phenomenography necessitates a paradigm that positions quantitative and qualitative perspectives as intrinsically linked" (p. 892). The approach allows for the concurrent collection of quantitative and qualitative data, and for the results from each study to be collectively integrated and analyzed during the interpretation of the findings. In addition, elaborate insights derived

from quantitative and qualitative studies work towards answering overlapping questions, providing a holistic view of the studied phenomena. More importantly, knowledge about the different ways participants experience the phenomena in an organization can lead to a better understanding of complex nuances in scholarly practices, methodologies used, and publishing behaviours, while providing potential options for appropriate changes in institutional tenure and promotion practices.

Research Design

An embedded triangulation mixed methods design approach was used for this multiphase study to obtain “different but complementary data on the same topic” (Creswell & Plano Clark, 2007, pp. 62-67). When using this research design, the researcher “collects and analyzes quantitative and qualitative data separately on the same phenomenon and then the results are converged (by comparing the different results) during the interpretation” (p. 64). The integration of quantitative and qualitative data can explain findings from one data set to the other. Integration can be implemented at “design, methods, and interpretation and reporting levels of research” (Fetters et al., 2013, p. 2135).

An explanatory sequential design was used in this mixed methods study where the research begins with the quantitative phase and is followed with a subsequent qualitative phase to help explain the quantitative results (Creswell & Clark, 2018). After the quantitative data was collected and analyzed, a qualitative design phase was implemented to choose, using purposeful sampling of participants who had volunteered through the survey, for the interview stage. There was second phase of the study where the primary documents chosen for review were collected from the University where all the participants worked. Faculty had to engage with these documents during their evaluations for tenure and promotion. Fetters et al. indicate that “expansion” occurs when the findings from all the three data sets the study diverge, expand, or complement the insights of the “phenomena of interest” (p. 2143). It is at this point that the integration occurs in an explanatory sequential design. Mixed methods as a research approach was chosen because it allowed for greater flexibility and for building a complex set of

queries, leading to a more complete understanding of the research questions being examined than an approach using either a quantitative or a qualitative method alone.

Mixed methods as an approach dates back to 1959, when Campbell and Fisk used multiple methods to study psychological traits (Creswell, 2014). Green et al. (1989) defined the mixing of methods as “those that include at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words), where neither type of method is inherently linked to any inquiry paradigm” (p. 256). Other researchers (Bryman, 2012; Johnson et al., 2007; Tashakkori & Creswell, 2007) refined the definition of mixed methods research to include greater flexibility and complexity. They incorporated the diverse definitions in existence into a definition of what is being mixed—where elements (i.e., data, findings, and inferences) of qualitative and quantitative research approaches are brought together in a single study to investigate the same underlying phenomenon in either parallel or sequential phases.

Cameron (2015) succinctly summarized Greene et al.’s (1989) conceptual framework for utilizing mixed methods research:

- Triangulation—Seek convergent results [confidence in results from one method is enhanced by using another method to measure the concept and thus making the data more robust],
- Complementarity—Explore interconnected &/or distinct aspects of a phenomenon [filling gaps left by another method],
- Initiation—Examine similarities, contradictions & new perspectives,
- Expansion—Add breadth and scope to a project [allowing the researcher to arrive at a comprehensive understanding of the issue], and
- Development—Use methods in ways to complement one another. (Cameron, 2015)

Creswell and Plano Clark (2018) developed a set of core characteristics to describe a researcher using mixed methods as one who:

- collects and analyzes both qualitative and quantitative data rigorously in response to research questions and hypotheses,
- integrates (or mixes or combines) the two forms of data and their results,
- organizes these procedures into specific research designs that provide the logic and procedures for conducting the study, and
- frames these procedures within theory and philosophy. (p. 5)

In essence, a mixed methods approach allows researchers to check the accuracy of data collected via one method with the other and helps explore questions that are not feasible with the other method to build on information discovered for a sample population. The results bring forth stories that converge or discrepancies that call for fresh perspectives (Green et al., 1989). In utilizing a mixed methods research approach, researchers also have the option of choosing from a variety of sampling methods. Whatever sampling technique is chosen, it is intended to “maximize efficiency and validity” and is consistent “with the aims and assumptions inherent in the use of either method” (Palinkas et al., 2015, pp. 534-535).

Phase 1—Faculty Online Survey and Individual In-Person Semi-Structured Interviews

The first phase of the study began with an online survey (quantitative), followed by individual in-person semi-structured interviews (qualitative).

Ethical Considerations

The first phase of the research study adhered to the policies and procedures established at the University of Victoria (2018), which concurred with the protocols outlined in the Canadian *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, Article 3.2 Consent Shall be Informed* (TCPS2, 2014; 2022). Several ethical issues were considered:

- Retaining the anonymity of the participants interviewed and surveyed was important, as identifying participants exposed the institution and departments where they worked. Each participant in the interview stage was assigned a pseudonym and identifiers of individuals referenced in the interviews were removed from the transcripts. The National Academies' Taxonomy of Fields (2006) was utilized to replace departmental affiliations to further protect their confidentiality. To maintain the privacy and confidentiality of the interviewees, data from the interviews will not be made openly accessible.
- Each methods section will outline how any other ethical considerations were addressed.
- In addition, as the main instrument for data collection and analysis, I was cognizant of my biases while creating the constructs for each method used in the study. My supervisors not only provided advice on the survey and interview questions from their perspective as faculty members, but also offered comments on the analysis phase and helped address the issue of trustworthiness in my research study.

Researcher and Epistemological Stance

The nature of this research is about understanding the phenomena (i.e., scholarly communication and publishing practices) from the scholar's perspective. A phenomenographical approach was best suited to acquire a subjective understanding of the impact open scholarly intentions and practices have had on scholars at the University; to hear about their challenges, successes, passions for the projects that they have embarked upon, strategies undertaken when faced with emerging research processes, and increasingly flexible venues and platforms for disseminating their research depending on the audiences or communities with whom they are collaborating. The approach allows for the concurrent use of quantitative and qualitative data so that the research problem can be explored and a variety of voices/perspectives can be heard.

I was the primary investigator for this study and so the research questions, data collection, and analysis were influenced by my researcher bias. Potential participants in this study were faculty members at the University and I had no power-over or influential relationship conflicts with them. This research constituted a way of finding potential solutions for issues that I (as a librarian at my institution) often encountered during consultations with faculty who: (a) have multiple publishing practices and dissemination strategies, and (b) work on varying types of research and teaching projects that require (due to external or internal organizational pressures) the sharing of results with the public.

It is therefore inevitable that my epistemological orientation and experiences have affected what I asked, including the kind of data collected, the modes of analysis, and what I took as evidence (Charmaz, 2012a)—"the researcher and the focus of enquiry are [inevitably] linked" (Hall et al., 2013, p. 18). I acknowledged this premise and endeavored to mitigate my bias using criteria developed by Guba and Lincoln (1982). They offer four criteria to assess the validity and confidence in the findings of the research study:

- Credibility – identifying factors in the research question that accurately describe ways in which these factors are reflected in the data gathered,
- Transferability – that findings are applicable to another context,
- Dependability – that findings are replicable during repetitions of the study, and
- Confirmability – that the data supports the conclusions. (pp. 246-247)

As a researcher using the epistemological frame, I was looking to understand the academic scholars experience within the new and evolving scholarly communications landscape. Meaning is derived from their scholarly intentions, praxis, and how it may have impacted them at the University.

In this study, I bridged the *how* of justifiable knowledge claims (epistemology) with the *why* of assessment adjudications (phenomenographical). The origin of this inquiry was born in the combination

of my experience as a librarian leading to an interest in open scholarship, within an institutional setting, and thus onto directed reading and a literature review (secondary data). As a matter of directional necessity, the phenomenographical methodological framework seemed an appropriate guide which had explanatory power encompassing both objective measurement and subjective inclusivity. As a matter of course, recognition of a comprehensive—360 degree—perspective (the objective case and the subjective case) became the goal or orientation. One could evaluate survey and interview correlation, even faculty evaluation policies as—broadly speaking—testimonials. In aggregation, these *reports* became the basis of data (primary data) for the study. Thus, a workable subjective understanding of a scholars experience of and within the open digital phenomena.

Compensation for Time Spent.

Participants were not offered any compensation for time spent taking the online survey. All individuals who participated in the in-person semi-structured interviews, however, received a \$20 University bookstore gift card as compensation for time spent doing the interview. It was offered to show recognition of the value of their contribution to the study and time spent, but not large enough to coerce their willing and voluntary participation. Participants were informed that they did not have to return the gift card if they decided to withdraw, at any point, from the study. Interviewees received the gift card at the end of their in-person interview.

Recruitment and Sampling Procedures

Survey Recruitment.

Upon receiving approval from the University of Victoria's Human Research Ethics Board (HREB; see Appendix A), I contacted the President of the Faculty Association at the University, explained the nature of my research study, and requested a breakdown of faculty positions. Table 4.1 provides a summary of research and teaching faculty employed at the University as of fall 2018. See Appendices B

and C for a copy of the email invitation and the consent form for the online survey sent to participants respectively. Participation in the survey was voluntary, anonymous, and participants could withdraw at any time without any explanation.

Individual In-Person Semi-Structured Interview Recruitment.

Participant recruitment for the interview stage began after the online survey was closed. A target of 15-20 interview participants was set for this stage and one of two recruitment approaches was considered:

1. Participants from the online survey who voluntarily opted to participate in the semi-structured interview phase of the study.
2. Faculty members who had submitted articles for archiving and preservation in the University's institutional repository.

Since there was a larger than expected pool of participants who volunteered (36 out of 156) through the online survey, I decided to only draw names from this list of individuals. Participants were recruited by means of purposeful sampling based on their rank, gender, and from a cross section of disciplines. They all had knowledge of or experience with the phenomenon of interest in the study: their engagement with open and traditional scholarship practices and awareness of criteria required for tenure and promotion at the department (Creswell & Plano Clark, 2018). Unfortunately, faculty from the Associate Teaching Professors and Teaching Professors ranks—did not participate in the survey. This may have been a result of the small sample size available from these two rank groups—they could be easily identified. Nevertheless, it was important that the sample population was willing and available to participate, and capable of communicating their “experiences and opinions in an articulate, expressive, and reflective manner” (Palinkas et al., 2015, para. 6).

Instruments

Survey Instrument.

Survey research provides a “quantitative or numeric description of trends, attitudes or opinions of a population” (Creswell, 2014, p. 13; Fowler, 2009) by gathering information from a sample population with the intent of generalizing from a sample to a larger population (Connaway & Powell, 2010). It is a method better suited for studying large number of cases, studying personal factors, and exploring possible relationships—in essence to determine what the masses are thinking and doing. In addition, a researcher employing this research method cannot manipulate the independent variable or control the research environment, as in the case with experimental research (Bryman, 2012, pp. 232-233).

According to Bryman (2012), respondents tend to report more in a self-completion questionnaire (p. 234). Furthermore, self-completion questionnaires can capture information that observations and interviews may miss, and it is a useful method for examining a compendium of practices, workflows, and behaviors across a large set of participants. In using a self-completion survey, interviewer variability is reduced when questions are not asked in different ways or order. Moreover, most scholars at higher education institutions are comfortable using some form of online tool for conducting interviews, meetings, and answering questionnaires. Web-based surveys are also cost-effective, as they do not take long to prepare, design, administer, and send out invitations to participate.

Utilizing a descriptive design approach (i.e., designed to describe the distribution of the variables without regard to any causal or hypothesis) for the survey, I conducted an environmental scan of the kinds of tools and platforms used by scholars across the University, and their reasons for and experiences with adopting these resources. The questionnaire included a combination of questions using the following related external frames: issue frames (an “evaluative stance or specific focus on an

issue”), decision frames (“focus on a particular way to make a decision”) or value frames (“focus on a value to discuss the issue”) (Stalans, 2012, pp. 80-85). Of the 34 questions (see Appendix D), including one question with four open-ended supplementary questions for further clarification, the majority were close-ended questions with the option to add an answer that was missing from a list. One was a Likert-scale question and required a response on an explicit scale. There was an open-ended question, at the end of the questionnaire, offering respondents the opportunity to add data on issues they felt were significant and relevant but were not addressed in the survey.

Questions were divided into eight sections: 1) demographic information 2) discovering new literature 3) use of social media in research and teaching 4) tools used for analysis 5) tools used for writing 6) tools used for outreach and dissemination, and 7) tools used for assessment. In the final two questions, participants were asked about the usefulness of their online network profiles and whether they supported any ‘open’ initiatives (e.g., open access, open education, open data, open licenses, open government, and/or open source software). Finally, survey respondents were given the option to volunteer in the study’s interview phase. Personal information submitted for the individual in-person semi-structured interview phase was extracted and filed for processing separately.

Interview Protocols.

As a methodology, phenomenographic studies employing interviews collect data (normally 15-20 interviews) with a focus on identifying variations in participants’ experiences to a particular phenomenon. In-person semi-structured interviews provide for greater interaction between the interviewer and the participant, thus improving the quality of the data collected (Wallace & Van Fleet, 2012, pp. 180-181). Moreover, semi-structured interviews stress the interviewee’s point of view, allowing them to dictate the direction of the research, while providing insight into “what the interviewee sees as relevant and important” (Bryman, 2012, p. 470). “[M]ajor questions are followed by probing questions to facilitate the development of rich material on as concrete a level as possible”

(Limberg, 2008, p. 3). Individual in-person semi-structured interviews are not, however, without challenges—it is just as likely for an interview to proceed in an unexpected direction as an unproductive one, and procedures require time for interviewing, transcription of the interviews, and the analysis of the transcripts.

Conducting individual in-person semi-structured interviews allowed me to narrow the conversation to very specific components of the study (Palinkas et al., 2015) and to build upon the results of the online survey. In utilizing this method, I hoped to understand the choices faculty (non-tenured and tenured) make in using technology platforms to disseminate their scholarly outputs, their experiences in experimenting with new modes of scholarly communications, and to ascertain if there are communities of practice within and across disciplines. Furthermore, I was interested in discovering their perceptions about current tenure and promotion practices. Individual semi structured interviews provided the opportunity for identifying trends in scholarly practice—a reflection of current practice within the University at the time of the study. See Appendices E and F for a copy of the participant interview invitation and the interview consent form respectively.

The individual in-person semi-structured interview protocol (see Appendix G) included eight main and 12 subsidiary questions. First, participants were asked about their rank, gender, and primary departmental appointment. The next set of questions focused on the following scholarly activities: how have technological advances allowed scholars to share their research (e.g., what types of outputs, what criteria was used when choosing a distribution channel/platform, whether content was made openly accessible, etc.); whether participants or their colleagues engaged with the public and what challenges they faced when doing so. Questions related to tenure and promotion practices (e.g., accepted types of scholarly outputs and the metrics used for evaluating these outputs and their scholarly impact) concluded the question set. It was important to discover how participants assessed the impact of their

scholarship and their perspectives on existing University reward/incentive structures (i.e., tenure and promotion policies and standards).

Data Collection Procedures

Survey.

According to Garner, when using an online questionnaire, the researcher should ensure that the data and results “represent the perspectives of everyone to whom the survey refers” (2017, p. 1729). Gideon (2012) stated that “in order to generalize ... or make inferences about populations of interest ... it is essential that the sample is as similar to the population as possible” (pp. 53-54). In this context, I hoped that “studying [a] smaller group (the sample) would reveal important information about the larger group (the population)” (Gideon, p. 53) at the University. Furthermore, findings drawn from an unrepresentative sample may not only bias the results but may cause problems when discussing possible strategies for change at the University.

Since the purpose of this study was to generalize findings about scholarly communications and publishing practices to all faculty at the University, the target population for the survey was drawn from the six faculty appointment classifications (i.e., Assistant Professor, Associate Professor, Professor, as well as the ranks of Assistant Teaching Professor, Associate Teaching Professor, and Teaching Professor) found in the University’s faculty collective agreement (see Table 4.1). These six faculty stakeholder groups represented a large cross sample of participants best positioned to provide information on their individual and collective attitudes and behaviours regarding their scholarly communication and publishing practices. Taken together, the information gathered could provide a broad view on the topics addressed in the survey. In fact, the group represented a small case study, providing a reliable representative sample, from which inferences and generalizations about their scholarly communications and publishing practices could be drawn.

Steps were undertaken to produce a reasonable response rate for the study. I approached the University's Systems department for approval to send, on my behalf, a set of scheduled broadcast emails (see Appendix B) inviting all faculty, within the six faculty ranks, to participate in the online questionnaire (see Appendices C and D). A month into the two-month survey period, I requested and received additional permission from the Human Research Ethics Board to send two other reminders to increase participant response rates: an email invitation through the chair of each department and a printed invitation to each faculty member via campus mail. It was estimated that it would take participants 15-20 minutes to complete the online questionnaire. Respondents could participate on their personal computer or portable devices, and at their convenience within the scheduled two-month period.

The broadcast email included a summary about the study and an invitation (a hyperlink) to participate in the survey. The introductory page to the survey included more details about the survey and an online consent form (see Appendix C). Participants received the first broadcast email in late October 2018 and reminders were sent at subsequent scheduled intervals, over a two-month period:

- The first reminder was sent in late November (a month later).
- Second reminder was sent in early December:
 - An email of the survey invitation was sent to the chair of each department to forward to faculty.
 - A printed version of the survey invitation was also sent to faculty participants via campus mail.
- A third reminder (mid-December) was sent two weeks before the end of the survey.
- The last reminder was scheduled a week before the end of the survey. I cancelled delivery of this reminder because there were no responses online for a week before this period. I

concluded that a saturation point had been reached after the third reminder. Any further reminders may have annoyed participants instead. Furthermore, since the survey was set for anonymous participation, there was no option to limit reminder emails to those who had not participated.

Interviews.

Between March to April 2019, I sent email invitations (see Appendix E) to 20 of the 36 online survey volunteers to participate in the interview phase of the study. I purposefully selected participants from both the teaching and research ranks, and across disciplines to get a broad cross sample at the University. Upon receiving agreement via email from 16 volunteers, I sent informed consent letters (see Appendix F) to each participant between April-May. As soon as I received their letters of consent, each participant was contacted to schedule an interview. Participants were given a choice of meeting in-person or online using a web conferencing tool (via BlueJeans) available at my university. All interviewees chose the in-person option and had the interviews conducted in an office to maintain privacy. Furthermore, interviews were not scheduled at times that intruded upon participants' teaching or other work/professional commitments.

The interview protocol guide (see Appendix G) was sent to participants two days prior to the scheduled interview. Before each interview began, participants reviewed and signed the consent letter (see Appendix F), and were reminded that the interview would be recorded, and that they could stop the interview at any time. As part of the semi-structured interview process, I did not always follow the sequence of questions as outlined in the interview guide but had the option of departing from the schedule of questions (spontaneous contingency) to pursue questions related to topics introduced by interviewees. All the questions on the interview protocol guide were pursued and similar wording was used from interviewee to interviewee. Data collection continued until gathering fresh data no longer revealed new insights or perspectives (Charmaz, 2006). Upon completing 12 interviews, I noted similar

themes emerging but continued with the prearranged schedule to ensure that I maintained a purposeful cross sample of participants based on their discipline and gender distribution at the University.

Interviews were completed by the end of May 2019.

Interviews were recorded with the consent of the interviewees. On average, each interview took approximately an hour and recordings were captured using two digital devices: (a) a handheld audio recorder and (b) the audio recorder application on my personal phone—two copies of the audio recordings were captured in case one recording failed. In all cases both versions of the recordings were successful. In one case I scheduled a second session to complete the interview, which took a total of two hours. During the sessions, I kept written notes for follow-up questions I wanted to pursue with each interviewee. The audio recordings, transcriptions, and written notes were stored in an encrypted state.

Participants' rights to ongoing consent included:

- Signing a consent form (see Appendix F) allowing me to use their data at all stages of the study, including transcripts.
- Participants had the opportunity to withdraw, edit or elaborate on their responses. They were given one month to provide feedback or to withdraw from the study.

Six participants reviewed the transcripts to ensure the data described their accounts and perspectives accurately. In addition, all participants were reminded that once the data was de-identified there was no opportunity to withdraw from the study.

Participant Profile

Survey participants.

Table 4.1 provides a summary of the 800 research and teaching stream faculty positions classified into six rank categories (i.e., Assistant Professor, Associate Professor, Professor, Assistant Teaching Professor, Associate Teaching Professor, and Teaching Professor) at the University as of fall

2018. Due to their small numbers, faculty holding academic and limited term appointments were folded into the total counts for each associated rank category to ensure participant anonymity.

Questions one to six of the survey dealt with participant demographic information: discipline and department affiliations, rank, years at rank, age group, and gender. Due to the smaller than anticipated response rate, discipline and department affiliations and years at rank were not included in the final analysis to ensure the anonymity of respondents.

Table 4.1

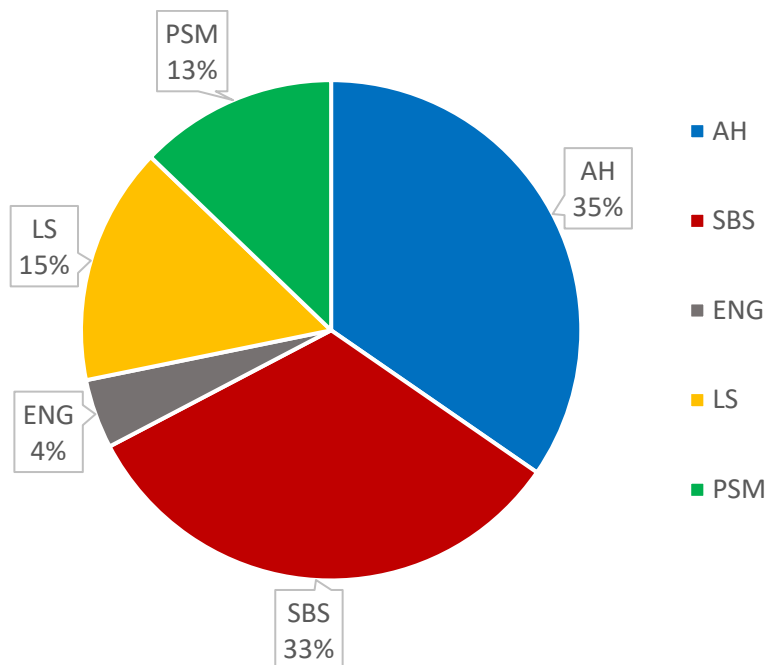
Number of Faculty by Rank at the University

Rank	Total members
Assistant Professor	121
Associate Professor	263
Professor	309
Assistant Teaching Professor	84
Associate Teaching Professor	15
Teaching Professor	8
Total	800

Participant engagement in the nine disciplinary areas at the University were subsumed under the five National Academies Taxonomy of Fields and Subfields (2006): Arts and Humanities (AH), Social and Behavioral Sciences (SBS), Engineering (ENG), Life Sciences (LS), and Physical Sciences and Mathematics (PSM). Figure 4.1 displays (pie chart) a slightly higher degree of engagement from participants in the AH (n=54 out of 156 or 34%) fields than from the SBS (n=51 or 33%) fields of study. A smaller number of participants responded from the LS (n=24 or 15%) and PSM (n=20 or 13%) fields, while ENG had the lowest number of participants (n=7 or 4.5%). The AH and SBS programs had higher response rates compared to those in LS and ENG. There were no responses from one non-academic area and one LS subfield.

Figure 4.1

Distribution of Faculty Participants Across Disciplines



Interestingly, there were no responses from the Associate Teaching Professor and Teaching Professor ranks—categories which had a smaller participant pool to draw from. In addition, only 5.8% (n=9) out of a potential 85 faculty in the Assistant Teaching Professor rank responded. Figure 4.2 reveals that more Associate Professors (n=65 out of 156 or 42%) and Professors (n=57 or 37%) than Assistant Professors and Assistant Teaching Professors (n=34 or 22%) responded to the survey. Figure 4.3 shows the age distribution of the survey respondents: most respondents spanned the 40-59 (n=101 or 64%) and 60+ (n=38 or 24%) age group categories. Only 17 (11%) participants were from the 30-39 age group.

Figure 4.2

Distribution of Faculty Participants by Academic Rank

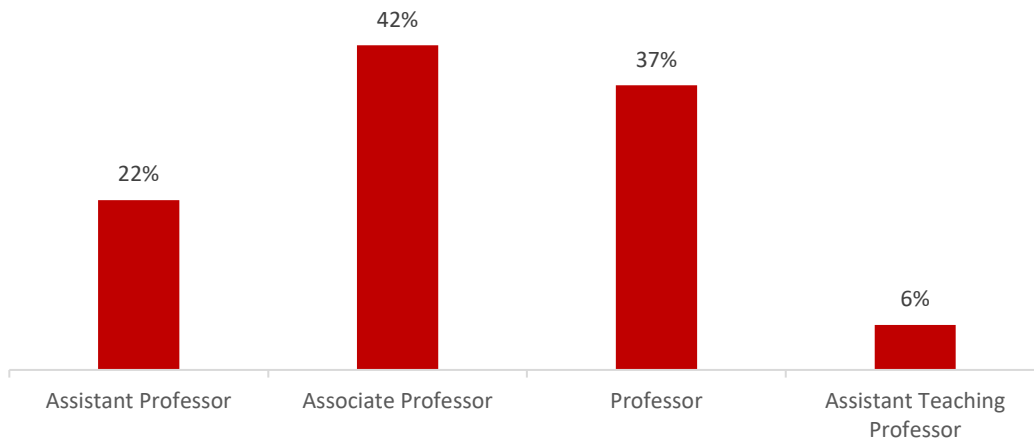
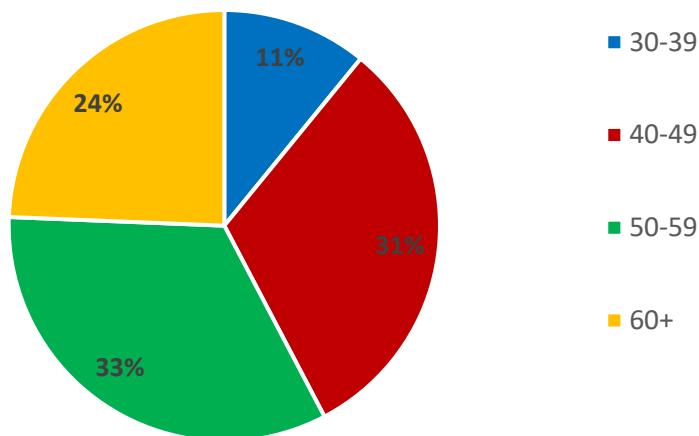


Figure 4.3

Distribution of Faculty Participants by Age

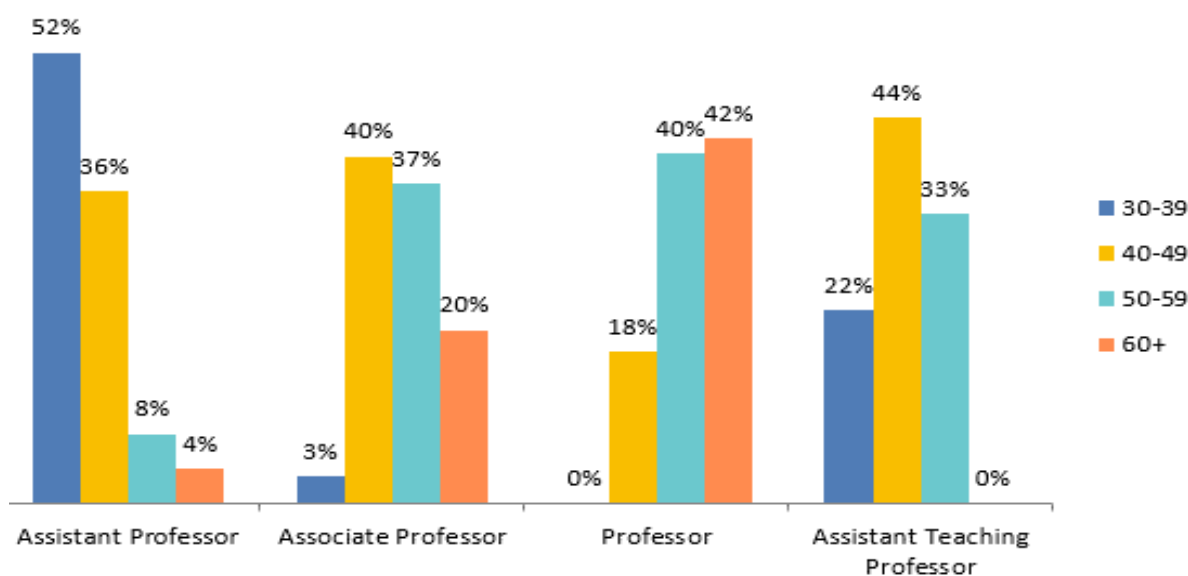


The distribution of participants by age and rank is presented in Figure 4.4. Most of the participants in the 60+ age group (n=24 out of 156 or 42%) were full Professors, compared to 20% (n=13) who were Associate Professors. There was greater engagement from Associate Professors (n=26 or 40%) than Professors (n=10 or 18%) in the 40-49 age category. Whereas there was almost an equal

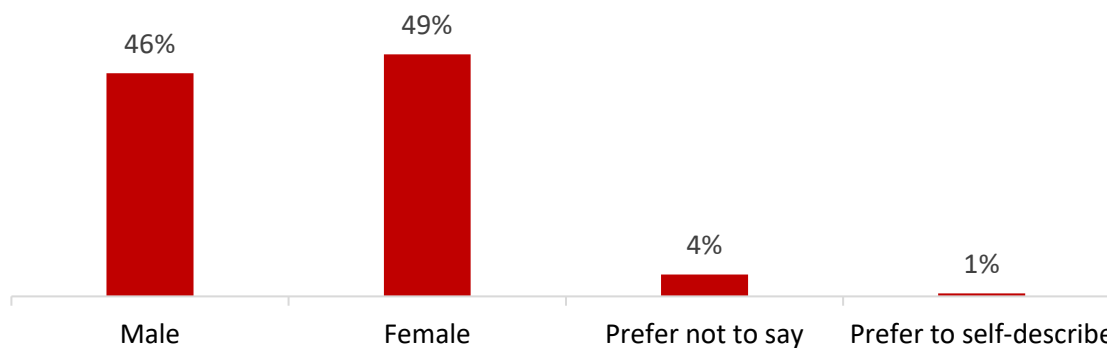
number of Associate Professors and Professors in the 50-59 age category (n=24; n=23 respectively) who participated in the survey. There was an almost equal distribution of Assistant Teaching Professors spread across the 30-39 (n=2), 40-49 (n=4), and 50-59 (n=3) age groups, while most Assistant Professors were found in the 30-39 (n=13 or 76.5%) and the 40-49 (n=9 or 18.4%) age groups.

Figure 4.4

Distribution of Faculty Participants by Age and Rank



Slightly more female faculty members (n=77 out of 156 or 49%) participated in the survey than their male counterparts (n=71 or 46%) (see Figure 4.5). A small number of participants (n=8 or 5%) preferred to self-describe or not state their gender. Table 4.2 shows a larger distribution of female respondents in the 40-49 (n=27 or 55%) and 50-59 (n=26 or 50%) age groups, and slightly more male respondents in the 60+ (n=19 or 50%) age category. There were more male participants represented in the Professors rank (63%).

Figure 4.5*Distribution of Faculty Participants by Gender***Table 4.2***Distribution of Faculty Participants by Age and Gender*

Age	Male		Female		Prefer not to say		Prefer to self-describe		Total	
	%	n	%	n	%	n	%	n	%	n
30-39	53%	9	47%	8	0%	0	0%	0	11%	17
40-49	41%	20	55%	27	2%	1	2%	1	31%	49
50-59	44%	23	50%	26	6%	3	0%	0	33%	52
60+	50%	19	42%	16	8%	3	0%	0	24%	38
Total respondents	46%	71	49%	77	4%	7	1%	1	100%	156

Interviews Participants.

Of the 36 faculty who volunteered through the online survey, 20 were purposefully selected (i.e., across ranks and with equitable gender distribution) to participate in the interview stage of the study. Sixteen faculty responded to the email invitation to participate in the interview stage. Table 4.3 provides an overall profile of the participants by rank and gender. Table 4.4 presents an overview of the participants by their disciplinary field. Each participant's departmental affiliation was classified into one

of four main disciplinary areas in the National Academies' Taxonomy of Fields and Subfields: Arts and Humanities (AH), Social and Behavioral Sciences (SBS), Engineering (ENG), and Physical Sciences and Mathematics (PSM) (2006) to further maintain their anonymity.

Table 4.3

Overview of Faculty Participants by Rank and Gender

Rank	Gender		Number Interviewed
Professors	2 females	3 males	5
Associate Professors	1 female	4 males	5
Assistant Professors	2 females		2
Assistant Teaching Professors	3 females	1 male	4

Table 4.4

Overview of Faculty Participants by Gender and Disciplines

Participant	Gender	Programs Areas
Participants A, D, G, K, P	F	Arts and Humanities
Participants B, L, N, O	M	Physical Sciences and Mathematics
Participant W	F	Physical Sciences and Mathematics
Participant C	F	Engineering
Participant H	M	Engineering
Participant F, J, M	M	Social and Behavioral Sciences
Participant S	F	Social and Behavioral Sciences

Analysis Plan

Survey data analysis.

I used Survey Monkey, an online survey tool licensed by my institution, to distribute a self-completion questionnaire to faculty participants at the University. When the survey closed, it had accumulated 156 responses—a participation rate of 19.5% out of 800 potential participant (see Table

4.1) across all disciplinary areas at the University. Approximately, two thirds of the 156 participants responded within the first month and took about 11 minutes to complete the online survey that was open from late October to late December 2018. Of the survey responses, all completed the survey to the end, with 53% completing all the items, while 47% had skipped certain questions. Two thirds of the participants responded within the first month and took about 11 minutes to complete the online survey that was open from late October to late December 2018. Questions one to six were mandatory, however.

In using Survey Monkey, I was able to maintain participant anonymity. The online tool automatically collected and recorded participants' (anonymous) responses in its database. Due to the anonymous nature of the survey, it was not possible to withdraw participant data from the survey and where the population size was small, results gathered were presented in aggregate form to ensure participant anonymity (see Table 4.1 and Figures 4.1 and 4.2). While the survey tool presented a summary of the data for each question, it also provided options for the filtering of results via cross tabulation, allowing one to focus on specific areas of importance in the study.

Interview Data Analysis.

After completing all the in-person interviews I transcribed the recorded interviews. In doing so, I became more familiar with the material and was able to perform a preliminary, first round, analysis and identified emerging themes and descriptions that aligned with each of the research questions. Next, I listened to the recorded interviews again to review and modify the themes developed. The interview transcripts were then imported into QSR International's NVivo 14 software to further compare the data and identify similarities and differences between the interviews. Analysis of the interview transcripts was undertaken after the content analysis of the primary documents phase was completed in order to better understand the University culture encompassing faculty evaluation. In analyzing the transcripts, I applied the same qualitative content analysis approach as that employed on the tenure and promotion

documents in phase two of the study. Focus for the analysis was guided by the research questions. In phenomenographical research subjects' utterances, in terms of selected quotes, related to the questions that were investigated and from this rich data pool, the researcher's attention shifts to the "meaning embedded in the quotes" (Marton, 1986, p. 43). Quotes were sorted and then categorized based on their similarities or differences. Illustrative quotes accompanied the categories developed. The categories were broadly defined to allow for flexibility in interpretations: research and teaching outputs; criteria for choice of online platforms; open intentions/initiative; access to library resources; community (internal/external) engagement; and tenure and promotion. The results were then integrated and woven into the narrative with the aid of joint displays of the results (see Chapter 5) and the interpretation levels (see Chapter 6).

My analysis was strengthened as I worked through the process with one of my supervisors who helped reduce my bias and provided additional feedback. Though limited by some participant categories (i.e., from Associate and Teaching Professors) it is my hope that the results from this study can provide some important data on the beliefs, concerns, and scholarly intentions of faculty at the University.

Phase 2: Content Analysis of Tenure and Promotion Documents

Krippendorff defines content analysis as a "research technique for making replicable and valid inferences from texts ... to the contexts of their use" (2004, p. 18) and the documents could include "print, audio, images, video, architecture, or any other representation of knowledge" (Wallace & Van Fleet, 2012, p. 223). The documents may be personal (in written form such as diaries, letters, journals, and in visual form such as photographs, official documents from public (state, universities, etc.) or private sources (produced by organizations), mass-media communications, and virtual communications. Bryman (2012) states that these documents as sources of data may be viewed as "representations of the reality of that organization ... tell[ing] us something about what goes on in that organization and will

help us to uncover such things as its culture or ethos ... [and they] are windows onto social and organizational realities” (p. 554).

Continuing within the phenomenographical framework established for this study, I chose a qualitative approach to analyze a sample of purposefully chosen official University policies and guidelines—documents that benchmarked expectations and assessment procedures for the evaluation of faculty holding research and teaching appointments. Content analysis was the data analysis technique applied to analyze these documents. The data was organized into categories “in which words or word units ... share the same central meaning or connotation” (Connaway & Powell, 2010, p. 223). The approach was “unobtrusive” and had the advantage of being “non-reactive” (Bryman, 2012, p. 543). The qualitative content analysis approach began from a humanistic perspective and employed an inductive process (i.e., drawing broad generalizations from specific observations) of analysis. In applying this method, I started with open questions rather than a hypothesis. Krippendorff (2004) noted that analytical constructs may be derived from 1) previous research successes and failures, 2) expert knowledge and experience of/with a context, and 3) established theories and practices (p. 173).

Based on my knowledge and experience working with faculty on scholarly communications and publishing practices, I focused on the following questions within the context of the University being studied:

- What activities and outputs were referenced in the University’s policies and tenure and promotion documents?
- How did the activities and outputs mentioned in the documents vary across disciplines?
- What metrics or types of assessments were used to measure the quality of scholarly and creative outputs?

I was interested (as were Alperin et al., 2022) in exploring these activities and outputs beyond the traditional publication channels (see Figure 1.1.). The framing of the research question (i.e., what activities and outputs were referenced in the University's tenure and promotion policies) draws comparisons between traditional forms and alternative forms of scholarship—a framing that is derived from the literature on tenure and promotion (see Chapter 3 - Literature Review, Alperin et al., p. 2) and from my professional experience.

Scope of Documents

I chose, by means of purposeful sampling, based on the research questions for this phase of the study, a select set of primary documents from four administrative levels: (a) the University's Strategic Plan and Community-Engaged Scholarship (CES) document; (b) the University/Faculty Association collective agreement; (c) academic discipline-based faculty evaluation policies (evaluation policy); and (d) academic unit tenure and promotion standards/guidelines (see Table 4.6). These documents expressed the context, expectations, and procedures related to faculty evaluation present at the time. Any documents updated after the data collection period were not included in the study. In addition, the scope of the documents complied with Scott's (1990) four criteria for assessing document quality: (a) they were authentic (unquestionable in origin) (b) credible (free from error and distortion) (c) representative (typical of its kind), and (c) clear in meaning and understandable (p. 6). All the documents gathered were created sometime between 2015-2018. Figure 4.6 provides a visual hierarchical representation for the gathered documents.

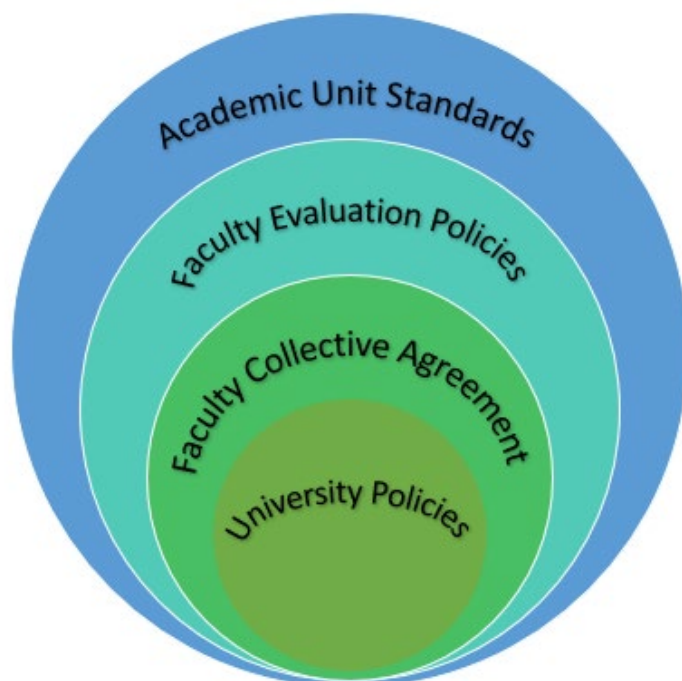
Since all these documents formed the institutional framework for the evaluation of faculty at the University, I examined them to discover how they may have influenced faculty scholarly communications and publishing behaviour and practices. Mechanisms or processes related to salary evaluation procedures were excluded from this study. At the time of this data collection, the University

was in negotiations to renew the Collective Agreement that expired in 2019. Any revisions to the documents gathered were out of scope for this study.

The implied readership for all these documents were university administrators, department chairs, tenure and promotion committees, and faculty members. These documents were not only written for a distinctive purpose but were invariably linked to and/or were a response to and interconnected or intertextually linked with the other documents (Atkinson & Coffey, 2011; Bryman, 2012, p. 555). All the documents were structurally important as they not only built the context around the tenure and promotion process but represented the institutional framework that influenced and impacted faculty scholarly communications and publishing behaviour and practice. Inevitably what the university valued was described in its tenure and promotion and policies and by the criteria used to evaluate faculty members (Weiser & Houglum, 1998).

Figure 4.6

Institutional Framework for Faculty Evaluation



Documents Collection Procedures

In the summer of 2018, I gathered all the documents. The University strategic plan, community-engaged scholarship guidelines, and the collective agreement were accessible on the University's website. Only six of the nine faculty evaluation policies, however, were readily accessible on the University's website. I received a copy of each of the remaining three evaluation policies upon request from the respective deans. It is important to note that a few years after this initial request, only three of the nine current policies were openly accessible on the University's website (i.e., as of spring 2024). One wonders what reason University administrators had for restricting public access and transparency to these important documents.

Structurally, several academic units (generally four to ten) existed within each faculty. I contacted the chair of each academic unit, and in some cases the dean, explained the nature of my research study and requested access to each academic unit's standards document governing the tenure and promotion process. Two of the disciplinary areas only had faculty evaluation policy documents as they were considered non-departmental faculties. Another did not have any academic unit level tenure and promotion standards documents as they referenced their disciplinary evaluation policy, and the processes stipulated in the collective agreement. One dean denied my request for access to the seven academic unit level standards documents in their discipline. One discipline posted its academic unit level standards documents on its website—an exceptional and unusual case of transparency adopted by the departments. Two non-academic areas were excluded from the scope of the study. In summary, there were three university level documents, nine faculty evaluation policies, and thirty-one out of forty-four academic unit documents available for analysis (see Table 4.5).

Table 4.5*Potential Sources of Primary Documents*

Discipline	Number of Faculties and Academic Units
University strategic plan (USP)	1
Community-engaged scholarship (CES) guidelines	1
Collective agreement	1
Life Sciences (LS)	1 FEP and 9 academic units
Physical Sciences & Mathematics (PSM)	1 FEP and 4 academic units
Engineering (ENG)	1 FEP and 4 academic units
Arts & Humanities (AH)	2 FEPs and 15 academic units
Social & Behavioral Sciences (SBS)	4 FEPs and 11 academic units
Total Number of Documents	9 FEPs and 44 academic units

Content Analysis Plan

Content analysis was limited in scope to the purposefully selected primary documents listed in Table 4.6 and was undertaken upon completion of Phase 1 of the study. In order to maintain anonymity of the University being studied, I applied the National Academies Taxonomy of Fields (2006) to categorize the evaluation polices and academic unit levels into five disciplinary areas.

According to Connaway and Powell (2010) content analysis involves “organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learnt, and deciding what you will tell others” (p. 224). The coding scheme unfolds and flows from an iterative process, as the researcher identifies and refines categories and definitions during the coding process. Researchers focus “on the uniqueness of the text” (White & Marsh, 2006, p. 36) and are aware of the possibility for multiple interpretations. Coding ceases when no new patterns or findings related to the concepts are found. The researcher tags key phrases and text segments that correspond with the research questions and records their decisions and comments in memos that take the form of concept

memos or theory memos. “Memos reveal the subtleties of the researcher’s interpretation and understanding of the constructs over time” (White & Marsh, p. 38). Coding is the starting point for the qualitative data analysis of the promotion and tenure documents. The process provides a mechanism for thinking about the meaning of the data—that is, the significance of the coded material to the lives of the people being studied, how they relate to the research questions, and the literature that instigated the data collection (Bryman, 2012, p. 575).

The qualitative approach for analyzing the primary documents that I utilized emphasized the text rather than the researcher—that is, scrutinizing the text(s) to allow concepts and patterns or themes to emerge out of the data and recognizing its significance in the context in which they were produced (Bryman, 2012, p. 554). The objective was to determine if emerging patterns in the data could be used to build a ‘big picture’ of tenure and promotion culture and practices at the University. I began my analysis by incorporating the categorical classification and definitions of scholarly outputs developed by Alperin et al. (2019), who conducted a comparative study to understand the value of the public dimensions of faculty activities in 864 promotion and tenure documents from 129 universities in Canada and the United States. The authors had grouped the scholarly outputs into 15 categories, with accompanying descriptions for each (see Table 5.32). These concepts were used as the foundation for reviewing the primary documents at the University and were incorporated into the procedures for the study:

1. First, I manually read each document and noted anything of significance.
2. Secondly, I loaded the documents into QSR International’s NVivo 14 software to analyze the data, identify patterns, themes, and connections between documents. The documents were grouped into three separate sets (i.e., NVivo nodes) corresponding to the University-level policies (i.e., University strategic plan, community-engaged scholarship guidelines, and the collective agreement), the faculty-level policies, and the academic unit standards.

3. Next, I searched each document for the terms listed in Table 5.1 and recorded new terms for inclusion and the reasons for my decision, as appropriate.
4. Finally, I reviewed the results to determine if I was using two or more words to describe the same phenomena and/or incorporated them into the existing categories where appropriate. As a final step in the analysis, I examined the data to determine if there were connections between terms/concepts and explored ways to code these relationships (Bryman, 2012, p. 575).

Chapter Summary

In this chapter, I presented the methodological design and the two study phases taken for this research. This includes a description of the methodological frame for the study, an explanation of the ethical considerations for participant recruitment, how I maintained participant and institutional anonymity, and concludes with a description of the approaches for data collection and analysis for each mixed method used. Using a mixed methods approach, I:

1. analyzed and interpreted the materials according to the standard procedures generated by the individual methods deployed, and then
2. integrated the information gathered into an overall analysis and interpretation directed toward answering the research questions.

These methods afforded a comprehensive approach, eliciting a rich set of data from various sources and merged to provide a holistic view of the studied phenomena. Chapter 5 presents an integrated summary of the findings from all research phases of the study.

Chapter 5:

Results

This chapter presents an integrated, joint analysis narrative of the data gathered from the two mixed methods study phases: Phase 1—a survey (quantitative) and interviews (qualitative), and Phase 2—a content analysis of selected tenure and promotion (qualitative) related documents from the University. Using the phenomenographic methodological approach, I explored the scholarly communication and publishing practices scholars intentionally adopted; reasons for adopting these new practices; challenges and barriers they encountered when doing so; and their perceptions of the impact these practices had on tenure and promotion processes and decisions. Scholars' descriptions, personal reflections and perceptions were then compared against the evidence derived from the tenure and promotion documents.

As mentioned in Chapter 4, an explanatory sequential design was used to interweave the results from the three mixed methods studies and grouped into the following categories: (a) the tools used for discovering and accessing new literature, data analysis, writing and preparing manuscripts, outreach and dissemination (sharing their own research or learning about others' research and teaching activities), and assessment; (b) the usefulness of online network/researcher profiles; (c) support or engagement with 'Open' initiatives (e.g., open access, open education, open data, open licenses, open government, and open source software); and (d) the types of research outputs scholars produce. The categories were derived from the initial research questions (see Chapter 1) and correlate to the conceptual framework of *Access to Knowledge*. Finally, a review of these activities against the tenure and promotion documents concludes the analyses. The categories mimicked the structure of the questions in the survey and allowed me discern the scholarly communications and publishing practices (i.e., types of research and teaching outputs and channels for dissemination) and motivations of scholars at the University. The open-ended comments from the final question in the survey were embedded into the above categories,

where appropriate. Although there were 156 participants in the survey in total, they did not respond to every question, except for the mandatory questions at the beginning of the survey. The results from the mandatory questions were reported in Chapter 4.

Types of Tools Used for Academic Research

Discovering New Literature

When asked about which scholarly societies and professional organizations they belonged to (Question 6), 130 out of 156 participants listed more than one organization, six said that they did not belong to any, one had allowed their membership to lapse, and another felt this activity was not applicable. Twenty participants skipped the question. When asked about the conferences they attended often (Question 7), they named conferences that varied in scale and held at local, provincial, national, or international locations. The nature of the responses did not make it possible to code or quantify the results given the wide variety across disciplines. Later in the survey scholars responded and confirmed that the purpose for their participation in the associations, societies, conferences was to learn about “what’s new” in their field and to disseminate information about their own scholarship. I did not probe into the reasons for their non-participation in societies and associations.

Question 8 centred on the scholarly blogs and wikis scholars regularly read. Out of the 127 participants, 55 claimed they did not consult any blogs or wikis and 6 considered this activity not applicable. Some cited specific blogs they consulted, while others said they did not read “them regularly” or sought out blogs based on “specific topics.” This information was important to deepening my understanding of how different disciplines view these forms of communications. Next, scholars were asked if they maintained or contributed to scholarly blogs, wikis, websites, or online collaborative sites (Question 9). Out of 142 participants, 91 (64%) indicated that they did not maintain or contribute to any blogs, website, wikis, or online collaborative sites (see Table 5.1). Only 40% (n=22 out of 142) of

Professors indicated that they engaged in this activity. Assistant Teaching Professors, on the other hand, were the least engaged (n=7 out of 142 or 78%) in this activity (see Table 5.2).

Table 5.1

Number of Faculty Who Maintain/Contribute to Blogs, Websites, Wikis, etc.

Answer Choices	Responses	
	%	n
Yes	36%	51
No	64%	91
Total Responses		142

Table 5.2

Number of Faculty Who Maintain/Contribute to Blogs, Websites, Wikis, etc. by Rank

Rank	Yes		No		Total	
	%	n	%	n	%	n
Assistant Professor	32%	7	68%	15	15%	22
Associate Professor	36%	20	64%	36	39%	56
Professor	40%	22	60%	33	39%	55
Assistant Teaching Professor	22%	2	78%	7	6%	9
Total Responses	36%	51	64%	91	100%	142

Searching for Literature.

When participants were asked “What tools/sites do you use to search for literature” (Question 10), 119 out of 139 (86%) participants indicated they used the library databases, 113 (81%) Google Scholar, and/or 89 (64%) the library catalogue (see Table 5.3). Participants could select all that apply for this question.

In the comments, participants shared the titles of some specific subject and general databases they used (e.g., PubMed, QuickLaw, SciFinder, Web of Science, ACM Digital Library, IEEE Xplore, Wiley Online Library, MathSci Net, WorldCat, etc.). They accessed these databases via their University library, through personal subscriptions, or had access to other libraries' resources through previous affiliations. A number of other tools were mentioned: (a) journal websites, reviews in journals, bibliographies in articles and books; (b) social networking sites like Facebook, Twitter (now known as the X platform), Academia.edu, ResearchGate, and ORCID, as well as subject specific networks such as SSRN, RePEC, and ArXiv); (c) tools generally accessible on the internet like Canadiana.org, Archive.org, Zotero, Google Books, and Philpapers.org to name a few; and 4) resources accessible through other university libraries, digital collections, and a general google search. Now that the Twitter platform has been rebranded and had its ownership shifted along with its practices, responses to its use may have changed.

Table 5.3

Tools Used by Faculty to Search for Literature, Data, etc.

Answer Choices	Responses	
	%	n
Library databases	86%	119
Google Scholar	81%	113
Library catalogue	64%	89
Institutional repository	17%	24
Mendeley	6%	8
Paperity	1%	1
Total Responses		139

In a response later in the survey, one participant mentioned using community-based reports and analysis that are local, non-governmental, and international, besides practitioner-oriented tools and sites. Assistant Professors tended to use Google Scholar (n=21 out of 139 or 95%) for their searches, while Professors used both Google Scholar and the library databases (n=47 out of 139 or 87%) almost equally (see Table 5.4).

Table 5.4

Tools Used by Faculty to Search for Literature, Data, etc. by Rank

Rank	Library databases		Institutional Repository		Library catalogue		Google Scholar		Mendeley		Paperity		Total	
	%	n	%	n	%	n	%	n	%	n	%	n	%	n
Assistant Professor	77%	17	18%	4	59%	13	95%	21	9%	2	0%	0	16%	22
Associate Professor	89%	48	17%	9	65%	35	74%	40	9%	5	0%	0	39%	54
Professor	87%	47	20%	11	69%	37	87%	47	2%	1	2%	1	39%	54
Assistant Teaching Professor	88%	7	0%	0	50%	4	63%	5	0%	0	0%	0	6%	8
Total Responses	86%	119	17%	24	64%	89	81%	113	6%	8	1%	1	100%	139

Accessing the Literature.

It is the university library that 136 out of 139 (98%) scholars overwhelmingly turned to when asked about tools/sites they used to access titles found through their literature review (Question 11). Ninety-one out of 139 (65%) scholars consulted open access journals/articles pertinent to their research. participants could select all that apply for this question. They also tapped social networks like ResearchGate, Academia.edu, Twitter, research networks like SSRN, ArXiv, RePEC, SciHub, and IDEAS, in addition to emailing the author to gain access to a copy of the article (see Table 5.5) to gain access to the content. They purchased books, had individual subscriptions, or memberships to journals and associations, when needed.

Table 5.5*Tools Used by Faculty to Access Literature*

Answer Choices	Responses	
	%	n
Via Libraries	98%	136
ResearchGate	37%	51
Academia.edu	24%	33
OA journals	65%	91
Email author	35%	48
Purchase article/journal	5%	7
Total Responses		139

*Interview Transcripts***Interviewees overwhelmingly indicated that library resources were:**

- “very important,” “vital,” “massive,” and “absolutely essential” (multiple participants).

Access to digital content has meant that they conduct research and teach differently:

- “Entire academic career ... trajectory changed by technology”; “hugely influenced by digitized materials, [supplemented] by a few short trips to archives.” Textual analysis]: “current project is actually starting with online sources ... with quantitative look at the frequency of a particular ... [term] ... the result we came up with and we thought we never would have figured this out.... changed our ideas that we went in with” (Professor K);
- “I’m finding digital content; I don’t look at ... old books”; “it’s just faster and easier to find it; appreciate the searchability” (Professor J);
- “One of the ironic implications of students being born digital is that they’re really excited when ... they realize what a [print] book is ... a form of media” (Professor K);
- “Use text and data mining to do research on policy decisions” (Associate Professor O);
- “Whole class can be using it at the same time ... nice end run around ... students fighting over book and having to come up with 30 different projects” (Associate Professor D).
- “Use library subscribed content and a lot of non-traditional material” (Assistant Professor S);
- “If it’s not available for free online ... not ... easily available ... I more or less don’t read it” (Associate Professor N and Assistant Professor C);
- “Finding information on how others teach the same materials ... using it to inspire” (Assistant Teaching Professor B).

Challenges:

- “PhD students ... have access to too much ... stops them from actually working on stuff ... attention is scattered ... there is so much more noise” (Professor H);
- “Digitization doesn’t actually show you ... how the page opens and what facing pages looked like ... then it’s critical to actually know” (Professor K);
- [Open] “content gets edited so, it’s hard to curate” (Associate Professor O);
- “Things I want [students] to see are not open access. So, I’m still kind of grappling with chapters out of books, and then [face copyright] challenges around how to ... I’m conscious of the cost of my coursepacks are so much higher” (Professor G);
- “Unable to access core journals of my research would be totally debilitating”; “a faculty member would choose not to go to a university ... we’re not a big enough university to get away with it” (Assistant Professor C).

Students are generally assigned mixed material formats, and traditional/non-traditional publications:

- Articles from journal, magazine, and newspapers, books, and book chapters (peer-reviewed, open, and popular), primary and grey literature, cases, YouTube videos, blogs, newsletters, websites, reports (multiple participants).

Getting Alerts.

For the question “What tools/sites do you use to get alerts/recommendation,” 55 out of 127 (43%) participants indicated that they used Google Scholar and 51 (40%) participants used Journal Table of Contents services (see Table 5.6). They also used ResearchGate (n=36 or 28%) and Academia.edu (n=29 or 23%) to a lesser extent. Scholars commented that they also used Twitter feeds, journal RSS feeds, Feedly, reviews, publication announcements from publishers, professional newsletters, mailing lists, blogs, and tracking a journal title list. Curiously, 12% (n=15 out of 127) of participants mentioned that getting alerts was not pertinent to their work. Participants could select all that apply for this question.

Scholars listed the following reasons in the comments for not using these services: “I chose not to sign up for many of these because my inbox is already overwhelming,” “I keep track of over 60

journals myself,” “I am not sure they work if I don't have time to read the literature to which the alert is directing me,” “I read voraciously, but not because I'm prompted,” and “I don't want to be sent alerts. I regularly conduct searches because I want to, not because I'm prompted to do so by A.I. bots.”

Table 5.6

Tools Used by Faculty to Get Alerts and Recommendations

Answer Choices	Responses	
	%	n
Google Scholar	43%	55
Journal TOC	40%	51
ResearchGate	28%	36
Academia.edu	23%	29
Not pertinent	12%	15
BrowZine	1%	1
Delicious	1%	1
Mendeley	6%	7
Total Responses		127

Out of 127 responses in Question 12, 27 (61%) Associate Professors used the Journal Table of Contents services more than the other rank groups (see Table 5.7). The Professor (n=21 or 50) and Assistant Professor (n=9 or 56), ranks tended to use Google Scholar Alerts more often. Assistant Teaching Professors used Google Scholar and Journal Table of Contents primarily to receive alerts.

Table 5.7*Tools Used by Faculty to Alerts and Recommendations by Rank*

Rank	Google Scholar		Journal Table of Contents		Mendeley		Academia		ResearchGate		Not pertinent to my research		Total	
	%	n	%	n	%	n	%	n	%	n	%	n	%	n
Assistant Professor	56%	9	31%	5	6%	1	44%	7	31%	5	6%	1	13%	16
Associate Professor	55%	24	61%	27	14%	6	30%	13	30%	13	9%	4	35%	44
Professor	50%	21	43%	18	0%	0	21%	9	43%	18	14%	6	33%	42
Assistant Teaching Professor	17%	1	17%	1	0%	0	0%	0	0%	0	67%	4	5%	6
Total	43%	55	40%	51	6%	7	23%	29	28%	36	11.81%	15	100%	127

Reading, Viewing, and Annotating.

Out of 133 responses in Question 13, 105 (79%) scholars said they used Adobe Acrobat and/or the HTML version (n=60 or 79%) compared to the other choices to read, view, and annotate articles and books on the internet (see Table 5.8). Participants could select all that apply for this question. In the comments, five scholars conveyed that they still preferred having a paper copy when annotating or making notes. Some scholars used other tools: Paperpile, Mac PDF viewer, Drawboard PDF, and other PDF viewers available for the Mac and Linux environments.

Table 5.8*Tools Used by Faculty for Reading, Viewing, and Annotating*

Answer Choices	Responses	
	%	n
Adobe Acrobat	79%	105
HTML	45%	60
Mendeley	6%	8
iAnnotate	5%	7
Hypothes.is	2%	2
Not pertinent	8%	11
Total Responses		133

Social Media Tools for Sharing and Learning.

At the time this study was conducted (i.e., 2019) Twitter (n=57 out of 128 or 45%) was the most popular social media tool used by scholars to share their research and to learn about others' research (Question 14; see Table 5.9). Participants could select all that apply for this question.

Table 5.9*Social Media Tools Used by Faculty to Share and Learn*

Answer Choices	Responses	
	%	n
Twitter	45%	57
Facebook	38%	48
Google+	10%	13
Reddit	3%	4
Not pertinent to my work	20%	25
Total Responses		128

Associate Professors used Facebook (n=26 out of 128 or 59%) slightly more than Twitter (n=22 or 50%), while Assistant Teaching Professors (n=5 or 63%) declared that these activities were not

pertinent to their work (see Table 5.10). Participants could select all that apply for this question. In the comments, participants cited other social media tools they utilized to share or learn about research/teaching activities in their respective fields: Instagram, YouTube, LinkedIn, Flickr, WeChat, and Mathoverflow.net. Participants also cited reasons for non-participation: privacy issues, a source of distraction, time these activities consume, usefulness of engaging, disengagement in self-promotion, as well as commercial and monetizing activities of the sites. A few scholars noted they used these sites for private and not professional purposes. As for Reddit and Tumblr—some scholars did not know about these tools, lost interest in them due to the introduction of other more popular tools in the market, or did not find the activity a pertinent professional activity. Other participants disclosed that although they had accounts on these networks, they “are out of date, and ... do not use these networks actively,” “participate irregularly,” or were “more passive than active.”

Interviewees confirmed the use of Twitter as the most used tool for the dissemination of research, sharing, and finding out about other scholars’ research. Google Scholar is a tool they would actively maintain, while the other tools update themselves. A few interviewees mentioned that the tools were useful to those who wanted to raise their professional/career profiles. Cases of online harassment and trolling experienced by themselves or by colleagues were noted and they offered suggestions for communities where discussions were more friendly, and mechanisms for curation and mitigating harassment. The ultimate solution was to completely shut down the sites.

Table 5.10*Faculty Use of Social Media Tools to Share and Learn by Rank*

Rank	Facebook		Google+		Reddit		Twitter		Not pertinent to my work		Total	
	%	n	%	n	%	n	%	n	%	n	%	n
Assistant Professor	39%	7	11%	2	0%	0	78%	14	0%	0	14%	18
Associate Professor	59%	26	14%	6	7%	3	50%	22	25%	11	34%	44
Professor	35%	13	14%	5	0%	0	51%	19	24%	9	29%	37
Assistant Teaching Professor	25%	2	0%	0	13%	1	25%	2	63%	5	6%	8
Total	38%	48	10%	13	3%	4	45%	57	20%	25	100%	128

Interview Transcripts

- Research “community uses [Twitter] a lot” (Professor J)
- Use it if “trying to change my career or move” (Professor K);
- “Using it to disseminate research results; to interact with scholars to promote conferences ... share comments ... disseminate conference results very broadly” (Professor K); “so when I’ve published something that’s particularly relevant ... I’ll put out a tweet ... and sometimes about others’ work” (Assistant Professor J);
- “Online presence ... I think has impact ... half the post-doc applications want to work with me ... get comments at conferences from grad students at conferences” (Associate Professor N);
- Google Scholar – “actually actively maintain ... I always put my stuff up there” (Associate Professor F);
- “Facebook “nice, closed community” (Assistant Teaching Professor P); Facebook forum “generally quite supportive ... talk about research and progress ... research sees the light of day ... there is reciprocity ... share ideas” (Associate Professor D);
- “noticing when my colleagues have things and posting what happens for them”; “using it as an opportunity to amplify voices ... of women working on research ... and minorities in STEM ... amplifying excellence of people who aren’t part of that traditional academic network” (Assistant Professor C);
- Use is “based on whether people in the field are using it” and “to see what other people are up to” (Assistant Teaching Professor W);

- Was “generally not accepted in the field” and that these tools are used by “those who are more focused on their careers” (Assistant Teaching Professor B);
- “Raises the profile of the university profile” (Assistant Teaching Professor W);
- “I’m all over [Twitter] ... use it to test ground with research I’m doing” “live tweet talks” “use it to make contacts” (Assistant Teaching Professor P).

Challenges

- “Know of colleague whose research attracted unwanted attention” They had to “close the [Twitter] account down ... disappear from online ... aware of the cost that can come with that kind of dissemination of research”; “would be thinking about tweets much more carefully”; “when you are tweeting ... you run risks of condensation and oversimplification ... might elect not to” (Professor K);
- “Live tweeting conference papers ... that shouldn’t be circulating yet [affects] intellectual and professional capital ... balancing act between open access and sharing ... that really benefits the community (Associate Professor D);
- “Basically, hate [Twitter] ... it’s a cesspool of vileness and I don’t like even logging in” (Associate Professor F); Was on a listserv but “got off it because I found that it simply replicated at a faster speed some of the nastier conversations ... people can be quite cruel and engage in ad hominem attacks.” Eventually “turned it off” (Associate Professor D).
- “People sharing misinformation and then that propagating” (Assistant Professor C);
- “I suppose if you’re using social media as a platform there could be risks in terms of not having a controlled way of controlling threads and ways in controlling the kind of information, who’s participating in these conversations ... [not pushing] boundaries ... in kind of activist way” (Assistant Professor S).
- “Field can be competitive ... if it is a discovery, want to advertise or claim discovery” (Assistant Teaching Professor W).
- Some disciplines have “this serious problem with female researchers” (Assistant Teaching Professor P).
- “If research is controversial, can be attacked for assumptions [readers] make” (Assistant Teaching Professor W).
- Teach “how to curate in the best way possible” (Assistant Teaching Professor P).
- “Three strikes ... if you’re a racist ... more difficult to do that on [Twitter]” (Assistant Teaching Professor P).

The results from Question 15, “Do you actively participate in any social research, scholar, or career networks,” indicated that ResearchGate (n=52 out 126 or 41%) and LinkedIn (n=42 out 126 or

33%) were the popular tools used by scholars (see Table 5.11). Participants could select all that apply for this question.

Table 5.11

Faculty Participation on Social Networks

Answer Choices	Responses	
	%	n
ResearchGate	41%	52
LinkedIn	33%	42
Academia.edu	29%	37
SSRN	6%	8
ArXiv	5%	6
Not pertinent to my research	19%	24
Total Responses		126

In addition, Professors (n=24 or 59%) used ResearchGate more than the other social media platforms. Assistant Professors tended to use LinkedIn (n=12 or 67%) more than scholars in the other ranked groups. They also used ResearchGate and Academia.edu on an equal basis (n=9 or 50%). Assistant Teaching Professors generally did not find engaging in this activity pertinent to their work (see Table 5.12).

Table 5.12*Faculty Participation on Social Networks by Rank*

	ResearchGate		Academia.edu		LinkedIn		SSRN		ArXiv		Not pertinent to my research		Total	
Rank	%	n	%	n	%	n	%	n	%	n	%	n	%	n
Assistant Professor	50%	9	50%	9	67%	12	17%	3	6%	1	0%	0	14%	18
Associate Professor	46%	19	39%	16	39%	16	5%	2	5%	2	22%	9	33%	41
Professor	59%	24	29%	12	32%	13	7%	3	2%	1	24%	10	33%	41
Assistant Teaching Professor	0%	0	0%	0	14%	1	0%	0	29%	2	71%	5	6%	7
Total Responses	41%	52	29%	37	33%	42	6%	8	5%	6	19%	24	100%	126

Interview Transcripts

- “Time is a factor” (Professor J);
- Told graduate students “you have to have an online resume ... evidence online of your research results ... strategically navigating an online presence and curating that online presence” (Professor K);
- “Getting a lot of emails ... not helpful” (Professor J);
- Use of ResearchGate and Academia.edu—“Prior to my tenure I felt the pressure to demonstrate impact” and uploaded “all kinds of pre-press type pdfs” (Associate Professor F);
- “Not doing a lot of work to personally update them; I wouldn’t say I’m very active” (Professor G);
- Use it “because everyone says you should” (Assistant Professor C);
- “Based on how many people in my field would be using it” (Assistant Teaching Professor W);
- “Knows that it can help but not ready” (Assistant Teaching Professor W);
- Use listservs for discipline and “learn a lot from those exchanges ... just an observer”; need to “learn how to communicate” (Assistant Teaching Professor A).
- “Know of colleague at another institution who uses it to get access to inaccessible content” (Assistant Teaching Professor C);

Data Analysis

Scholars were asked in Questions 16 about what tools they used to analyze data, text, etc. Excel (n=65 out of 133 or 49%) was the tool most used by scholars to analyze their data (see Table 5.13). It

seems the use of R (n=20 or 15%) is slowly gaining momentum in comparison to the use of SPSS (n=23 or 17%). Data from the survey question and the comments indicate that scholars use a variety of other tools or a combination of tools to analyze data, including iPython, matlab, NVivo, atlas-ti, dedoose, Mathematica, Fortran, Mplus, SAS, Stata, Voyant, Python, KaleidaGraph, Goldvarb, and Grapher 4, among others. A couple of participants indicated they wanted to learn more about the tools listed. About 31% (n=41) of scholars stated that none of the tools listed were pertinent to their work. Participants could select all that apply for this question.

Table 5.13

Tools Used by Faculty for Data Analysis

Answer Choices	Responses	
	%	n
Excel	49%	65
SPSS	17%	23
R	15%	20
Matlab	6%	8
iPython	3%	4
rOpenSci	0%	0
DHbox	0%	0
Not pertinent to my work	31%	41
Total Responses		133

Of the tools listed to share notebooks, protocols, and research workflows in Question 17 (e.g., Open Lab Notebooks, myExperiment, BenchLink, Protocols.oi, and Benchfly), scholars did not find any of them pertinent to their work (n=71 out of 117 or 61%). Participants could select all that apply for this question. They did, however, comment on other tools they used to share notebooks and research workflows, including Google Docs/Google Drive Suite, GitHub, and Dropbox. Others indicated using an institutional network drive, Zenodo, Figshare, Paperpile, Zotero, Overleaf, Open Science Framework,

email, Slack and Asana (to manage projects and advise students), and Skype. Some indicated they had either no idea these tools existed or were unfamiliar with them at the time.

Manuscripts and Citations

When scholars were asked what tools they used to write or prepare their manuscripts in Question 18, 126 out of 135 participants (93%) said they used Microsoft Word. Some also used Google (30%; n=40) and LaTeX (n=18 or 13%) as part of their daily routines (see Table 5.14). Participants could select all that apply for this question. One scholar indicated that GoogleDocs was used when there was “collaborative work” involved. The use of Overleaf and Scrivener, on the other hand, may be the result of publisher workflow requirements. Participants also listed other software (e.g., Windows or Mac platforms; open source software; or discipline-based tools) they were used in their daily practice, including AbiWord, LibreOffice, Pages, WordPerfect, plain text, R Markdown, Sibelius, Adobe products, and Scientific Word (LaTeX Editor).

Table 5.14

Tools Faculty Used to Write and Prepare Manuscripts

Answer Choices	Responses	
	%	n
Word	93%	126
Google	30%	40
LaTeX	13%	18
Scrivener	4%	6
Overleaf	5%	7
Total Responses		135

In Question 19 participants were asked about reference or citation management tools they used. Participants (n=42 out of 116 or 56%) indicated they utilized EndNote software to manage their citations, and 16% used RefWorks (n=19). A few participants commented that they compiled their

citations manually— “by hand” or “old school.” Eleven of them used Zotero, six exported citations from their Google Scholar accounts, and still others used a variety of other products, like Paperpile, Bookends, Microsoft Word, and Papers (see Table 5.15).

Table 5.15

Tools Faculty Used for Reference or Citation Management

Answer Choices	Responses	
	%	n
EndNote	36%	42
RefWorks	16%	19
Mendeley	9%	10
Papers	8%	9
RefMe	2%	2
Total Responses		116

Dissemination

Questions 21 to 29 dealt with faculty outreach and dissemination behaviour and practices. About one-third of the participants either skipped the questions in this section or considered these activities not pertinent to their work. Exceptions in responses occurred in Questions 22 (whether faculty archived research and teaching outputs in institutional or subject repositories), 28 (what tools they used to tell others about their scholarly activities outside academia), and 29 (what researcher profile sites scholars used).

Since publishers allow scholars to post a version of their journal articles on their department/university websites, I was interested in discerning how many scholars took advantage of this option. In Question 21, 57 out of 114 participants (50%) indicated that they preferred to use their personal websites, while 31 participants (27%) indicated using their department websites, and 28 participants (25%) said this activity was not pertinent to their work (see Table 5.16). Participants could select all that apply for this question. A few participants had permission to post their work to a central

research department, or project server at the University or on an external website. participants indicated that they posted the following types of outputs: photos, PowerPoint slides, abstracts of their work, research grants, bibliographies from published monographs, working papers, research projects, preprints, selected conference papers, reviews of work, interviews, course outlines, notes, exercises. In some cases, they posted links to the above outputs.

Table 5.16

Department or Personal Websites Where Faculty Archived Scholarly Outputs

Answer Choices	Responses	
	%	n
Department website	27%	31
Personal website	50%	57
Not pertinent	25%	28
Types of research outputs maintained	37%	42
Total Responses		114

When scholars were asked (Question 22) about the type of repository they archived their scholarly outputs, 43 out of 113 participants (38%) chose the institutional repository as the top option (see Table 5.17). They also used SSRN, Humanities Commons, and ArXiv.org, subject repositories, repositories, the University Archives, and their external drive and cloud service (e.g., Figshare, Health repository, ChemRxiv, etc.). One participant indicated that although they did not archive their research, they “have had students do so.”

Table 5.17*Faculty Use of Discipline-Based/Institutional Repository to Archive Scholarly Works*

Answer Choices	Responses	
	%	n
Institutional Repository	38%	43
arXiv.org	7%	8
Humanities Commons	2%	2
RePEc	2%	2
SSRN	9%	10
Not pertinent	32%	36
Total Responses		113

When asked if they used photo or image sharing services in Question 23, 71 out of 107 participants (66%) indicated that they did not think it was pertinent for work. When they contributed, it was Facebook (n=19 or 18%) that saw greater use. Scholars also used other platforms like Instagram, Wikimedia Commons, Flickr, and Pinterest to share their photos and images (see Table 5.18). participants could select all that apply for this question.

Table 5.18*Faculty Use of Photo or Image Sharing Sites to Disseminate Scholarly Works*

Answer Choices	Responses	
	%	n
Facebook	18%	19
Flickr	2%	2
Instagram	7%	7
Pinterest	1%	1
Wikimedia Commons	4%	4
Not pertinent	66%	71
Total Responses		107

For Question 24, “Do you use any social slide sharing services to disseminate your scholarly outputs,” 8 out of 77 (10%) participants chose SlideShare to share their slides openly (see Table 5.19). Participants did not indicate if the sites were restricted to a select group or open to anyone with a link, except in the case of using a course management site. Most participants either found the activity “not pertinent” (n=71 or 90%) to their work or skipped this question (n=77) altogether. A few reported in the comments that they did not use any of the services listed. Some commented that they used course management sites, department image databases, or Google Drive/Slides.

Table 5.19

Faculty Use of Slide Sharing Sites to Disseminate Scholarly Works

Answer Choices	Responses	
	%	n
SlideShare	10%	8
Speaker Deck	1%	1
Not pertinent	90%	71
Total Responses		79

About one third of the participants skipped (n=59 out of 156) Question 25 and almost the same number registered this activity as not pertinent (n=55 out of 97 or 57%) to their work (see Table 5.20). YouTube (n=39 or 40%) was the popular tool used for sharing videos, while some also used Vimeo (n=13 or 13%) and Facebook (n=9 or 9%). In the comments, scholars indicated that they also used their personal websites, Instagram, and the University’s course management system to share videos. Interestingly, one participant mentioned that a journal publisher had requested that “authors upload a video of their accepted papers onto their website.”

Table 5.20*Faculty Use of Video-Sharing Sites to Disseminate Scholarly Works*

Answer Choices	Responses	
	%	n
Facebook	9%	9
Vimeo	13%	13
YouTube	40%	39
Not pertinent	57%	55
Total Responses		97

Contributing Code to social coding services (Question 26) is not an activity that most scholars engaged in, so it was not surprising that about one-third of participants either skipped (n=61 out of 156) the question or indicated that this activity was not pertinent to their work (n=80 or 84%). Of those who responded, 16% selected Github (n=15 out of 95) as the place they contributed code (see Table 5.21). In the comments some remarked they used Bitbucket, GitLab, and the Open Science Framework. Some participants expressed that they “have considered using Github & may in the future,” were “planning a project that will use Github,” or they were not aware of any sites. One respondent mentioned that their students or Research Assistants had or were competent in using them.

Table 5.21*Faculty Contribution to Social Coding Services*

Answer Choices	Responses	
	%	n
Github	16%	15
Not pertinent	84%	80
Total Responses		95

In Question 27, participants were asked whether they “use or contribute to any open or social data sites to disseminate your research.” Participants either skipped (n=67) the question or indicated that they did not find this activity pertinent to their work (n=57 out of 89 or 64% (see Table 5.22)). A few participants mentioned in the comments that they use Zenodo, Open Science Framework, and genomic databases to share their data. Some stated they planned on “investigating possible locations,” were “planning a project that will use GitHub,” or planned “to use Dataverse for protected access data soon.”

Table 5.22

Faculty Use of Open or Social Data Sites to Disseminate Research

Answer Choices	Responses	
	%	n
Institutional repository	25%	22
GitHub	11%	10
Figshare	2%	2
Zendo	1%	1
Dryad	1%	1
BitBucket	3%	3
Not pertinent	64%	57
Total Responses		89

When scholars were asked in Question 28 what tools/sites they used to share information about their scholarly activities, they indicated using Twitter (n=45 out of 106 or 42%), Facebook (n=36 or 34%), WordPress, Research blogs (n=36 or 34%), or LinkedIn (n=20 or 19%) most of the time, and to a lesser extent Wikipedia (n=11 or 10%). In the comments, participants also noted preferences for communication via presentations, direct communications with community, discussions via listservs, newsletters, publications, Instagram, their personal website, YouTube, and on sites like EUCAnet to name a few (see Table 5.23). There were still 27 participants (25%) who signaled that they did not find this activity pertinent to their work or skipped (n=50) the question entirely.

Table 5.23*Tools/Sites Used by Faculty to Share Information*

Answer Choices	Responses	
	%	n
Twitter	42%	45
Facebook	34%	36
Wordpress	21%	22
LinkedIn	19%	20
Research Blogs	13%	14
Wikipedia	10%	11
Kudos	2%	2
Pint of Science	1%	1
Not pertinent	25%	27
Total Responses		106

Survey Comments

- Some scholars (Question 34) reported that listing their scholarly outputs on their personal website/University website was the “most effective way to share work.”
- Occasionally they would “announce something on Facebook” about publications in refereed journals.
- They also used email and listservs to share information about their research.
- Workshops on dedicated projects were other ways to market their scholarly work, and they also utilized “Indigenous specific ways of sharing knowledge back to community, through relational work, community gatherings, feasts, presentations, storytelling, filmmaking”—sharing that was “directed at the most receptive and knowledgeable audience.”
- Conversely, others noted that self-promotion is not appropriate within certain communities; when working with community “humility is highly valued, so it would not be appropriate for [them] to highlight [their] achievements ... [when it is] more appropriate to highlight the achievements of others.”
- One individual stated that they “don’t really care about any of the social media sites etc. I publish and am glad if someone reads what I’ve written but am not interested in selling myself.”

The results from Question 29, “Which research profiles do you use,” revealed that scholars preferred using Google Scholar (n=66 out 118 or 56%) and ResearchGate (n=58 or 49%) more than Academic.edu (39%) and ORCID (38%) researcher profile sites (see Table 5.24). Participants could select all that apply for this question. This did not mean that they didn’t have profiles on multiple sites. About

14% (n=16) indicated that they did not find this activity pertinent to their work and 38 individuals skipped the question. Interestingly scholars commented that they did not actively participate or maintain their profiles on ResearchGate or Academic.edu and one mentioned “I have enough co-authors that my site seems to get updated without me doing anything.” On the other hand, some made the choice of not participating on these sites for a variety of reasons: “not interested in technology,” “people in my field are known to me personally (due to conferences, seminars, etc.),” and I “don’t know about them or am not sure if they are appropriate.” LinkedIn should have been an option on this list as some scholars, according to results in the other questions, used this tool for sharing information about their scholarly activity, learning about others’ work, and used it as a social and career network.

Table 5.24

Faculty Use of Researcher Profile Sites

Answer Choices	Responses	
	%	n
Google Scholar	56%	66
ResearchGate	49%	58
Academia.edu	39%	46
ORCID	38%	45
ResearcherID	5%	6
Not pertinent	14%	16
Total Responses		118

Assessment

In Question 30 on “Alternative Tools Used for Peer Review,” I was interested in finding out if scholars used alternative peer review tools/sites beyond the ones organized by commercial publishers (see Table 5.25). Most participants (n=63 out of 99 or 64%) indicated that it was not pertinent to their work or skipped (n=57) answering the question. Participants could select all that apply for this question. One respondent commented that Web of Science data was still the one they utilized when “asked to

review people’s research record—it’s “as good as it gets for that.” Of the 25 participants who made comments, 17 indicated that they did not use these tools or were unfamiliar with them.

Table 5.25

Alternative Tools Used by Faculty for Peer Review

Answer Choices	Responses	
	%	n
Peerage of Science	1%	1
PubMed	9%	9
Publons	4%	4
Not pertinent	64%	63
Total Responses		99

When given a choice of tools/sites to measure impact in Question 31 (see Table 5.26), most scholars indicated they used Google Scholar (n=74 out of 121 or 61%) and Journal Citation Reports (JCR) (n=50 or 41%). The Web of Science (28%) and SCOPUS (12%) databases were ranked in the second most used databases for this purpose. Participants could select all that apply for this question. Some participants commented that they also used the following tools: h index, MS Academic Search database (now defunct), Mendeley, InspireHEP database, and Repac.

Professors tended to use Google Scholar (n=32 out of 121 or 63%), JCR, Web of Science (n=20 or 39;) and to a lesser degree SCOPUS (n=5 or 10%) to measure impact. The results also indicate that Assistant Professors had a greater tendency to use Google Scholar (n=15 or 100%) to measure impact than their colleagues in the other ranks (see Table 5.27). They found that analyzing the impact of their work was an important activity, perhaps because they haven’t attained tenure. The journal’s citation report (JCR) database is generally important to scholars in all ranks. Respondents could choose all that apply for this question.

Table 5.26*Tools/Sites Used by Faculty to Measure Impact*

Answer Choices	Responses	
	%	n
Google Scholar	61%	74
JCR	41%	50
WOS	28%	34
Scopus	12%	14
SCImago	5%	6
Altmetric	3%	4
PLOS One	3%	4
Impact Story	1%	1
Not pertinent	24%	29
Total Responses		121

Table 5.27*Tools Used by Faculty to Measure Impact by Rank*

Rank	Journal Citation Reports		Google Scholar		Scopus		Web of Science		Not pertinent to my work		Total	
	%	n	%	n	%	n	%	n	%	n	%	n
Assistant Professor	47%	7	100%	15	27%	4	27%	4	0%	0	12%	15
Associate Professor	47%	22	55%	26	11%	5	19%	9	34%	16	39%	47
Professor	37%	19	63%	32	10%	5	39%	20	16%	8	42%	51
Assistant Teaching Professor	25%	2	13%	1	0%	0	13%	1	63%	5	7%	8
Total Responses	41%	50	61%	74	12%	14	28%	34	24%	29	100%	121

Survey Comments

- The University “will no longer allow you to measure hits in the old way / has discontinued allowing researchers to find out how many hits [they] are getting. Terrible situation.”
- “I never measure the impact of my work, as it is low on my priority of things to do at work.”

- “Impact metrics are such a crock. When you're working at current and cutting edge of stuff, citations don't help much. It's only if you're entering a field for the first time that it might be useful. Once working in a field, who knows what's going to be the great stuff. The true measure is the buzz at a conference.”
- “Most of my colleagues don't measure impact objectively - many of us are suspicious of software and algorithms [sic] that promise to perform this function. Instead, I just pay attention to the ways the "discourse" is moving, and who gets engaged directly. I don't do this. A sad academic game.”

Usefulness of Online Network/Researcher Profiles

In Question 32, scholars were asked about the usefulness (very useful, quite useful, not very useful, not useful at all, I don't know) of their online network profile sites for:

1. raising personal profiles in the research community
2. raising the profile of their work in the research community
3. attracting funding
4. sharing authored content
5. attracting collaborators
6. raising personal profiles in the department, and
7. raising profile of their work at the university.

Although participants spent time creating online profiles, they thought this activity “not very useful,” “not useful at all,” or “I don't know” for raising their personal profiles in the research community (n=77 out of 128 or 60%) and their department (n=109 out of 128 or 85%). 61% of participants (n=77) said that creating network profiles were “not very useful,” “not useful at all,” or “I don't know” for raising the profile of their work in the research community or the University (n=108 or 84%). A few felt that their personal profile in the research community and departmental profiles were very useful or quite useful for sharing scholarly work (n=70 or 54%), but not as useful for attracting collaborators (n=109 out of 126 or 87%). Table 5.28 shows that participants did not feel that their online profiles helped them garner grant funding (n=122 out of 128 or 95%). These results may account for the

comments in Question 15 regarding their level of participation on social, scholarly, or career networks—they created a profile on these sites and spend very little time updating them or finding the activity distracting.

Table 5.28											
<i>Usefulness of Faculty Network Profiles</i>											
	Very Useful		Quite useful		Not very useful		Not useful at all		I don't know		Total
Answer Choices	%	n	%	n	%	n	%	n	%	n	
Personal Profile- Research Community	9%	12	30%	39	21%	27	8%	10	31%	40	128
Profile of Work- Research Community	9%	12	30%	39	23%	29	8%	10	30%	38	128
Attracting funding	2%	3	2%	3	21%	27	39%	50	35%	45	128
Sharing authored content	14%	18	29%	37	15%	19	11%	14	30%	38	126
Attracting collaborators	5%	6	9%	11	29%	36	27%	34	31%	39	126
Personal Profile- Department	2%	3	13%	16	23%	30	27%	34	35%	45	128
Profile of work- University	3%	4	13%	16	23%	29	27%	35	34%	44	128
Total Responses											128
<i>Survey Comments</i>											
<ul style="list-style-type: none"> • One scholar mentioned (Question 34) that they had a researcher profile but “rarely logon/actively use it”; • Respondent stated that “[d]ependence on new technologies is not relevant to field of work”; • “Scholarly communications tend to be personal at my stage of career. We live in small research communities (well, at least I do) ... It's all in the scale of the communications: effective scholarly communication is that which is directed at the most receptive and knowledgeable audience”; • “Traditional publishing channels are only relevant sources for review of work”; “Publishing is the only important activity”; • Time, some said was an important consideration: “Extra burden on already heavy workload”; need time and institutional support to learn about new sites, methods, and software to use them effectively; “prefer to not use most social media for research or work as it takes too much time and is a distraction.” 											

Roughly 98%; (n=39) of Assistant, Associate, and Professors, however seemed to find online network profiles quite useful for raising their profiles (see Figure 5.29). Professors (27%; n=13) and

Associate Professors (37%; n=18) did not know how useful creating online networked profiles were for raising their profile in the research community. Assistant Teaching Professors (75%; n=6), found this activity either not useful or they did not know how useful this activity was for their work.

Table 5.29

Usefulness of Faculty Online Network Profiles by Rank

Rank	Very Useful		Quite useful		Not very useful		Not useful at all		I don't know		Total	
	%	n	%	n	%	n	%	n	%	n	%	n
Assistant Professor	14%	3	32%	7	27%	6	0%	0	27%	6	17%	22
Associate Professor	8%	4	29%	14	18%	9	8%	4	37%	18	38%	49
Professor	8%	4	37%	18	22%	11	6%	3	27%	13	38%	49
Assistant Teaching Professor	13%	1	0%	0	13%	1	38%	3	38%	3	6%	8
Total Responses	9%	12	30%	39	21%	27	8%	10	31%	40	100%	128

Engagement with Open Initiatives

130 of 156 participants answered Question 33 (see Table 5.30). In this question scholars were asked whether they supported the goals of any “open” initiatives (e.g., open access, open data, open education, open science, open source software, and open licenses). Most scholars indicated they supported open access initiatives (88%; n=115) and open licenses (81%; n=100). A little more than half supported open data (62%; n=78) and open education (57%; n=69) initiatives, whereas almost half the participants were not sure about the goals of open government (48.8%; n=60) or open science (48%; n=57) initiatives.

Table 5.30

Faculty Support for Open Initiatives

Answer Choices	Yes		No		I don't know		Total
	%	n	%	n	%	n	
Open Access	88%	115	4%	5	8%	10	130
Open Licenses	81%	100	1%	1	18%	22	123
Open Source Software	74%	90	2%	3	23%	28	121
Open Data	63%	78	7%	9	30%	37	124
Open Educ.	57%	69	4%	5	39%	47	121
Open Science	50%	59	3%	3	48%	57	119
Open Gov	49%	60	2%	3	49%	60	123
Total Responses							130

Survey Comments

There were other ways in which participants engaged in open initiatives:

- “Edit a journal that is open access”;
- “Strongly resist tools that are owned by traditional publishers ... they use it to close off the ‘garden’ to others.”

Conversely, some had reservations:

- “Have mixed feelings about open access.... Although the concept is a boon for readers especially non-academic ones, it hurts the careers of graduate students if it results in the premature publication of doctoral dissertations”;
- “Support open access but I would have a lot of questions and concerns”;
- “Very supportive of Open Access and creative communication practices such as video, blogs, [Twitter] these are typically not rewarded in promotion and tenure and yet have significant impact – this needs to be better reflected.

Interview Transcripts

Personal Intentions for Open:

- “Frequently have source code that’s released as open source software, both mine and my students. And also, data sets and documentation for reproducing experiments” (Professor H);
- “I used to post my you know course notes and slides and so forth on the open web ... consider myself to be part of the open science movement. I’m very keen on fostering transparency and this idea of posting pre, what they call pre-prints on ...Arxiv ... I’m trying to foster people to take on these open science practices” (Professor J);

- “I would say that increasingly for my own career and for my students’ careers I am suggesting a mix of say open access publications on reputable websites ... I feel like I must as a responsible scholar publish in open access” (Professor K);
- “Driving principle of my scholarship has become open access and I’m very committed,” “we are paid by the public by taxpayer funds ... we have a profound obligation to make it available not just to people who have subscription databases or can get to an academic library, but to the whole world” (Associate Professor D);
- “Belief in the democratization of data and publishing in open venues” (Assistant Professor C);
- “I’m definitely a proponent and advocate for open access” (Assistant Professor S);
- “Online textbook is one way of presenting the work ... to a wider audience” (Assistant Teaching Professor A);
- “I’m very much about wanting to publish my research only in open access journals ... our research needs to be public (Assistant Teaching Professor P).
- “Have nothing against open access to research ... everything should be out there”; “it’s a peer review process by the virtue of being ... available,” “Networking and making yourself visible can only help” (Assistant Teaching Professor W);

Commitment by Universities/Scholarly Associations

- “Universities should be open; knowledge should not be guarded (Assistant Teaching Professor B);
- “Its social commitment of universities ... Engagement, contributing to social justice” (Assistant Professor S);
- “It would be nice to have more accessible ways to disseminate ... [for example] conference proceedings are only available to people who are members of that association and publications in scholarly journals are again not widely available” (Assistant Teaching Professor A).

Challenges for Adoption:

- “We [don’t] cannibalize ... the publication houses that are so important” (Professor G); “it’s going to be very hard on some professional societies that do a lot of good” (Professor G);
- “I became very aware that people were publishing their work on their blogs and on ... various websites and not understanding that that meant it’s already published” (Professor K);
- “I don’t like the expensive ... paying you know \$3000 to get your article open immediately ... Or to have it open at the digital library and not at your repository. I find that given the amount of funding ... I would rather send a student to a conference with that \$3,000 and go that way” (Professor H); “The funding just doesn’t allow us to go that route” (Professor O); “Costs \$2,000 to publish open access ... that’s half of a student’s semester for me ... two OA publications ... I could hire another student (Assistant Professor C);
- “Cultural” barrier,” “I’m hoping I’ll have space to get away with this once I’m tenured,” “my students still need publications ... the recognized journals of my field are all subscription based journals,” “my students are

going to be evaluated when they are applying for jobs in the academic world ... journal impact factor is how I'm going to be evaluated in promotion and tenure (Assistant Professor C);

- "I find ... with journals that are not open access to be quite challenging ... I want to share the results of ... my work is community based ... so it's ... against the values of what I'm doing to have something that's not accessible," "The journals I want to publish in ... aren't open access ... the range of open access journals topically quite limiting still" "I would like to be in ... the higher-ranking ones" (Assistant Professor S);
- "Term position, until have permanent status" (Assistant Teaching Professor B);
- "Losing authorship," Question authenticity of work" (Assistant Teaching Professor W);
- "Producing an open textbook had "different levels of risk ... a lot of work ... big learning curve ... people could take your work and do stuff with it you don't intent," "my department will not see this as meritorious cos' it's an open textbook" (Assistant Teaching Professor A).

Tenure and Promotion Documentation

The University's strategic plan (2015-2019) provided the framework through which it articulated its vision, priorities, and actions. Important priorities of note included:

- Integrating outstanding scholarship, engaged learning, and real-life involvement;
- Providing an environment for the creation, dissemination, and mobilization of knowledge;
- Excelling in diverse forms of research and creative activity, innovation, and knowledge mobilization; and
- Integrating community-engagement and community-based research with teaching and learning, partnerships, and knowledge mobilization.

In addition, a rubric for assessing community engaged scholarship was created for the University to assist promotion and tenure committees. Together, these two documents may have had some impact on faculty scholarly communications and publishing intentions and practices, as well as the policies that were subsequently created at the disciplinary and department levels. The collective agreement between the Faculty Association and the University constituted the first source of documentation communicating the criteria associated with the evaluation of its members for the purposes of tenure and promotion.

Evaluative criteria differed depending on whether faculty held teaching or research stream appointments.

Faculty evaluation policies were in turn derived from the collective agreement. Each academic unit was expected to elaborate upon the evaluation policy to include criteria that was relevant to the practice of its particular discipline. Each evaluation policy was approved by faculty members in the respective disciplinary area and the Vice-President Academic and Provost, while the academic unit standards were ratified (by majority vote) by faculty members holding regular appointments in each department and approved by the Dean. It is important to note that only faculty members with full-time, permanent status voted on changes or amendments to the evaluation policy and academic unit promotion and tenure standards. In other words, faculty members with limited term appointments were generally not consulted in this process, though they were evaluated under the same criteria. The evaluation policies and the academic unit documents did not, however, show the discussion surrounding the creation of these documents, but present the final agreement reached amongst colleagues at a point in time and in relation to a particular cultural and professional context. All the documents were created between 2015-18.

Table 5.31 presents the general guidance and criteria (i.e., purpose, approval process, general evaluation criteria, and associated descriptive elements) for faculty evaluation laid out in the University's faculty collective agreement and the nine faculty evaluation policies. Academic units used these as a basis to prepare their standards/guidelines—one that also takes into consideration the established standard within the discipline into consideration.

Table 5.31

General Guidelines and Criteria for Faculty Evaluation in the Collective Agreement and Faculty Evaluation Policies

Categories	Description
Purpose	<ul style="list-style-type: none"> • Members are evaluated for the purposes of reappointment, tenure, and promotion. • Evaluation policies are prepared in accordance with the collective agreement to establish the performance expectations and assessment procedures for the evaluation of faculty members.
Approval Process	<ul style="list-style-type: none"> • Evaluation policies are approved by members of the faculty and the Vice-President and Provost. They are reviewed on a five-year cycle or as required. • Academic unit standards have to be consistent with the collective agreement and the evaluation policies, ratified by majority vote cast by members holding a regular academic appointment in the unit, and approved by the dean.
Evaluation-General Criteria	<ul style="list-style-type: none"> • Assessment of faculty is based on their years of experience and rank. Higher standards of performance are expected when moving from one rank to another and with years at rank. • Performance is evaluated in proportion to the member's full-time equivalent appointment. Quality and quantity measures established remain consistent with the established standards. • Evaluation policies include the criteria of evaluation for teaching performance, scholarly and professional achievement, and other contributions. A description of assessment techniques used is also included. • Relevant standards of practice in any particular discipline are considered in the development of the evaluation policies and academic unit standards. Assistant Teaching Professors and Associate Teaching Professors could be evaluated for their contributions to scholarship related to teaching. • Scholarly and professional achievement is defined as a mastery of one's field of knowledge, awareness of current scholarship, and the nature, quality, and extent of research, professional, and creative activity. Manifestations of these activities could be found in publications and scholarly papers, including alternate and emerging forms of scholarship; creative achievement related to faculty member's discipline; awards and fellowships granted by other institutions; memberships on boards or councils; recognition by learned and professional societies; and

evidence of reputation for scholarship by academic and professional colleagues
[emphasis added].

Types of Research and Teaching Outputs.

Participants were asked about the types of research and teaching outputs they produce in Question 20. Articles (n=128 out of 137 or 93%), book chapters (n=110 or 80%), presentations (n=106 or 77%), papers (n=87 or 64%), abstracts (n=80 or 58%), and books (n=72 or 53%) comprised some of the major forms of scholarly outputs participants created (see Table 5.32)—all representing traditional scholarly publishing channels (see Table Figure 1.1 for the types of traditional publishing channels). Other types of outputs selected included reports, course notes, data, images, textbooks, video, webinars, code, learning objects, podcasts, audio, and software. Participants could select all that apply for this question.

It was interesting to note that Professors (n=17 out of 137 or 32%) spent more time creating textbooks compared to Assistant Professor (n=1 or 5%) and Associate Professors (n=6 or 12%), while more Assistant Professors (n=10 or 45.5%) and Associate Professors (n=16 or 31) created data sets as a general practice (See Figure 5.2). Assistant Teaching Professors who responded (n=6 or 67%) spent an equal amount of time creating course notes, and presentations, while Assistant Professors spent very little time creating audio, code, images, or working on learning objects. Participants could select all that apply for this questions.

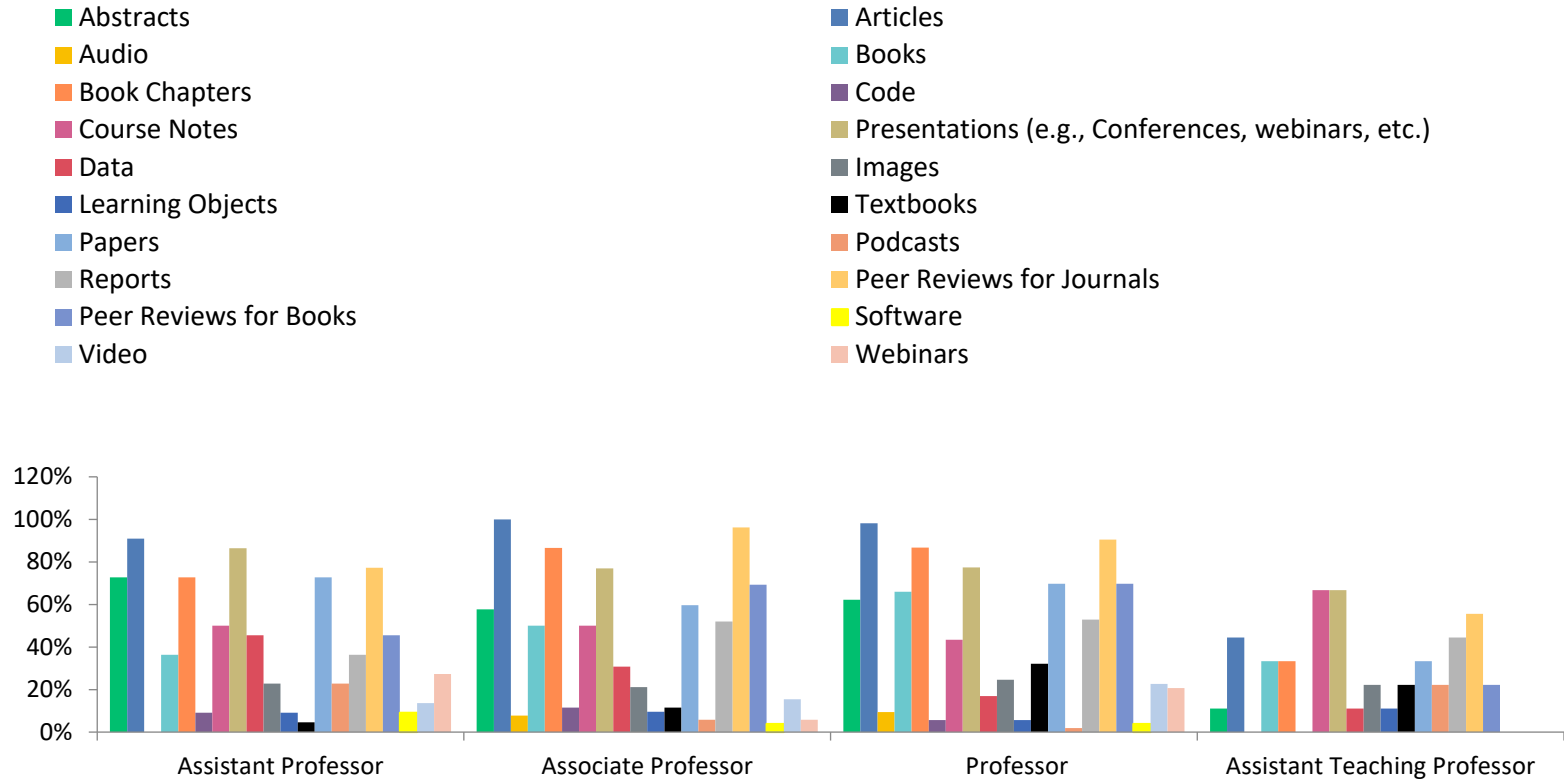
Illustrations of specific types of scholarly outputs mentioned in the evaluation policies, academic unit standards, interviews, and tenure and promotion documents are presented in Table 5.33. Research and teaching outputs mentioned by interviewees (see blue highlighted text), and suggestions from the professional associations (see green highlighted text) cited in the literature review (see Chapter 3) were integrated into the table.

Table 5.32*Type of Research and Teaching Outputs Created by Faculty*

Answer Choices	Responses	
	%	n
Articles	93%	128
Peer Reviews for Journals	88%	120
Book Chapters	80%	110
Presentations (e.g., Conferences, webinars, etc.)	77%	106
Papers	64%	87
Peer Reviews for Books	62%	85
Abstracts	58%	80
Books	53%	72
Reports	49%	67
Course Notes	48%	66
Data	26%	36
Images	23%	31
Textbooks	19%	26
Video	17%	23
Webinars	15%	20
Code	8%	11
Learning Objects	8%	11
Podcasts	8%	11
Audio	7%	9
Software	4%	6
Total Responses		137

Figure 5.1

Research and Teaching Outputs Created by Faculty and by Rank



Interview Transcripts – Reference to Research and Teaching Outputs Participants Created

General comments

- “Marked a shift in my thinking about and understanding research dissemination ... thinking about different audiences ... and how they might be reached” (Professor K);

	<ul style="list-style-type: none"> • “Objective standard of quality depends on the person, the context of the person; academic’s job is to constantly probe ... serving the best public interest; different discipline ... different currency” (Professor O); • “We need to acknowledge the imperatives that now drive SSHRC that now drive scholarly publishing” (Associate Professor D); • “Traditional outputs are easier for people to somehow compare and contrast” (Professor H). • “The advantages of having the tenure system I would say ... is that then you can kind of make this decision to focus on something and do these things that are a little bit more ... like long-term impact” (Professor H). • “Publish a lot of material that is only circulating in the community” of stakeholders (local communities and councils, provincial, tribunals), Need a “digital preservation strategy” (Associate Professor F); • “Tenure promotion criteria probably wouldn’t be particularly supportive of a researcher who did no scholarly publishing” (Associate Professor F).
Teaching outputs and evaluation	<ul style="list-style-type: none"> • Colleagues have gotten together and created a textbook—“Our Chair values that. That would be part of curriculum development” (Professor L); • Course evaluation surveys “are not very useful at gauging what we really want to know, which is you know how much have students learned. We seem to be more driven by how happy how good do they feel about the course” (Professor J); “more than enough research to show that student evaluations are flawed” (Assistant Teaching Professor B); • “Young women in our department in particular just get disgusting ... the evaluations are just ... nobody should read them” (Associate Professor N); “teaching STEM students who have an implicit bias against women” (Assistant Professor C); “there’s issues of gender and racial bias” (Professor H); • “The criteria I would like for evaluation is have I successfully created a learning environment in which people are challenged and required to take up questions of ... getting some sense of what the content is, of learning processes for learning, and if I’m having critical engagement ... how would you evaluate someone capacity to do that? (Professor G); • “I think that the best metric of teaching efficacy is where your students end up in life and how they apply whatever it is you taught them, and they have no way of assessing that the end of a 13-week course” (Associate Professor D);

	<ul style="list-style-type: none"> • “Unique materials that I develop”; “any deviation that I produce from [the textbook]”; “to find better ways to explain things than those that exist (Assistant Teaching Professor B).
Community engaged research	<ul style="list-style-type: none"> • “Very clear tenure and promotion criteria that recognize community-based research and community based dissemination of that research as scholarly production, not service,” “We have expectations with respect to that in terms of letters from communities,” “Our research ... is every bit as important if it's locally impactful,” “it would always come with a strong encouragement to not let the publishing go below the minimum” (Associate Professor F); • The University completed an “impact assessment of community engaged research, [studying] the knowledge outputs ... in 12 case studies ... from different departments. [It] demonstrated the diversity of knowledge outputs and non-traditional forms of knowledge outputs” (Assistant Professor S); • “it’s actually the peers in the department that are saying well no you’re just doing that community stuff or you’re just you know doing service ... There’s quite a few challenges, I think that need changing ... I feel like it’s the landscape’s changing just when we’re seeing the funding calls come out for example. And SSHRC is asking for more creative ways of disseminating ... an openness to use more diverse ways of disseminating such as videos and blogs and ... I think the funding structures are changing quicker than the university is changing (Assistant Professor S); • “Videos have been pretty central to the way we disseminate our research ... aim is to advance more inclusive policies [in the subject]” (Assistant Professor S); • “Art History, they’ve done some interesting weighting so we’d have like 2 journal articles would be equivalent to 3 webinars and maybe a newsletter and maybe a chapter ... History ... they’ve literally put weights on, they have a huge excel spreadsheet and it looks very daunting, ... one of the faculty there did a documentary had like international awards reached you know huge amount of a number of people likely had influence in the community that they were working with so and the impacts ... Still was weighted quite low. Even though it was a full-length feature film. It took over a year to make compared to somebody who’s maybe pumping out 2-3 journal articles a year ... Who’s it impacting, ... is that changing behaviour or is it changing policy ... Whereas these other forms of dissemination have greater potential to engage public,” “this mandate in our strategic plan of the university and then you have this very strong guidelines in our

	<p>strategic framework, and it does not trickle down to be recognizing it. So, faculty are doing it because they love and want to do it and that's what they believe in. But then they are not getting recognized for it" (Assistant Professor S).</p>
Criteria and Evaluation	<ul style="list-style-type: none"> • "When I measure impact ... people are using the article in their own research, and you know that's a scaffold upon which they are building ... my article's impact is the ultimate ambition," "Public interest in those papers that translate to change in regulatory or have legal standing" (Professor O); • A gap in the discipline policy – "not the production of the digital resource ..., but the versioning right to say when do you get credit ... I feel that there is still a lack of recognition for the constant upkeep of a resource" (Professor K); • "Where you publish is used to describe research and teaching ... how you measure impact and what constitutes excellence are the things that are up for grabs" (Associate Professor D); • "The book is at the top, of course. But they also have probably 50 different types of things [in the academic unit standards]. I would like to expand that list. It doesn't cover everything" (Associate Professor D); • "How you get stuff peer reviewed when it's a big digital project is a bit of a challenge ... Are you peer reviewing the content, are you peer reviewing the code, are you peer viewing in the interface, are you peer reviewing its interoperability, its digital preservation plan. And my feeling is that we probably need to peer review all those things independently by people who are qualified to peer review them," "With the web projects you know, there are different metrics that become useful ... you can look at that by referring source, by country, by domain, by you know time of day, how many pages they visit, and you learn to filter out those single page hits that are probably bots or web crawlers. And then, so then you focus your attention on those visits from .edu domains or .ca domains.... I'd like to see that metric being contextualized ... so what does it mean" (Associate Professor D); • "Not official but it's true that teaching you need to just be good enough to not fail it and research has much more of this spectrum ... and I struggle with that because I love my research but I also I love my teaching and I love doing a good job at teaching" (Assistant Professor C).
Service	<ul style="list-style-type: none"> • "The one that really doesn't have a lot of clarity to it and is frustrating is the service side (Assistant Professor C); • "The emotional service burden that falls to anyone who's in whatever way a minority within their department be someone that one of the few international faculty or indigenous or a woman or ... the result of ending up being an

	<p>emotional and logistical support and lifeline for a greater proportion of students ... that takes a toll, that takes a huge toll in addition to the time spent on it ... how does that play into how that impacts your other areas. And how do we make sure we account for whatever those burdens are even within that 20% service. (Assistant Professor C).</p>
Challenges	<ul style="list-style-type: none"> • “If I were to be assigned to that course, I also have to work from that [textbook]. That is in a way an infringement on academic freedom” (Professor L); • Community engaged work “slows down publications in the conventionally accepted framework of what publications look like because all of that kind of research with community actually takes way more time and space of where our work is,” “I would say in terms of where my publications are in the conventional way ... it looks like way fewer publications over the past X number of years, but I’m not sure that really reflects like a reduction in research capacity. (Professor G); • “Having served on ... the RPT committee, many times ... flexibility has been used in ways that really is attentive to the different ways some people more of their energy goes on the teaching side some people more on the publication side. And the lack of clarity has allowed us to be attentive to the very different forms of academics we have here” (Professor G). • “When I went up for tenure or for promotion, some of the reviewers like commented on ... how much of this is what’s hers. It’s hard to evaluate because these are co-authored. So interesting ... looking at it thinking about how the evaluation criteria disincentivizes and punishes the very thing that people say that we want which is collaboration” (Professor G); • “My blog contributions ... wind up in other peoples’ papers,” “Publication process is slow for some journals; I’ve made a name for myself now, so I get treated better by journals and referees” (Associate Professor N); • “Dealing with copyright can be such a hassle ... a time sync”; Solution – “put accreditation right on the image” (Assistant Teaching Professor B).
Individual’s Responsibility—Tenure process	<ul style="list-style-type: none"> • “You can take responsibility for these things yourself ... tell people what’s important about it. And I think we always have to do that anyway because our scholarly work is being assessed by people who work on the same hall and are by the very nature of academic hiring, not really qualified to assess our scholarship ... there’s no guarantee that anybody on my promotion committee will have any experience with digital scholarship. So, the onus is on me to explain why it matters and to show the amount of work that’s gone into it. And to show where the critical contribution lies” (Associate Professor D).

Table 5.33 includes illustrations of specific types of scholarly outputs mentioned in the FEPs and the academic unit standards. Research and teaching outputs mentioned by interviewees (see blue highlighted text) and suggestions (see green highlighted text) offered by the professional associations, not already documented, were integrated into the table.

Table 5.33

Types of Scholarly Outputs Mentioned in Policy Documents

Category	Description	Scholarly Outputs
Traditional	Relating to the longest standing and most formal mediums of scholarly communication, verbal and written (includes invited and refereed contributions)	Books and book chapters; Edited book; Journal articles; Conference presentations; Conference proceedings; Scholarly editions; Handbooks; Essay collections; Digital editions (with extensive websites); Critical editions; Case books
Conventional	Relating to other verbal and written works that caters to an academic audience.	Book Reviews; Editorials; Posters; Translations; Critical bibliographies; Critical commentary; Preprints; encyclopedia articles; grammars; dictionaries; Wikipedia article
Funding	Relating to the acquisition of research funding.	Grants; Funding
Unspecified	Relating to written dissemination of knowledge to an academic audience, format not specified.	Publications; Outputs; Papers; Manuscripts; Blogs – research and teaching
Arts	Relating to work that is in the realm of visuals, music, language, or performance.	Performances; Creator works; Exhibitions
Data	Relating to the creation or management of data.	Databases; Databanks; Datasets; Tests, questionnaires, and assessment instruments; electronic databases

Education/Teaching	Relating to the creation of pedagogical materials or methods.	Textbooks; Open textbooks ; Syllabus; Lectures; Lecture slides and notes ; Video lectures (recorded and streamed) ; online courses (free and commercial) ; Coding programs ; visualizations ; animations
Events	Relating to participation in a formally organized social occasion based around a topic with a specialized or academic audience.	Conferences; Workshops; Seminars; webinars , podcasts
Information and Communication Technologies	Relating to the medium of work that is digital, audible, or visually recorded.	Audiovisual resources, Aids, and materials; Videos, Digital projects; Video games ; Video/multimedia storytelling ; Maps and atlas
Intellectual Property	Relating to work that results in intellectual property.	Patents; Inventions; Technology transfer
Preprints	Relating to documents typically intended for peer-review but published ahead of that process.	Pre-print; Working Paper
Public Media	Relating to the dissemination of knowledge to a non-academic audience.	Newspaper articles; Films; Newsletters
Software	Relating to computer code in the form of software or programs.	Software; Computer Programs; Documentation for source codes
Third party collaborative	Relating to consulting or contract work where an individual is hired by a non-academic entity for their expertise.	Consulting works; Policy analysis and reports; Contract research and reports
Works in Progress	Relating to academic work that is in progress, has not been published, or is forthcoming.	Ongoing research; Unpublished work; Research in progress
Community-Engagement	Community engaged/based research with partnership in community (including professional community).	External referee for T&P; KMB plans/creative projects; building CE/University networks; Micro-reports ; Process of creating partnerships ; expert witness in courts or tribunals ; video policy briefs ; policy briefs ; community film making ; participatory videos ; websites ; apps ; op-eds

leading reading groups,
community events, speaker
series; development of
archives

Note: Adapted from “The value of data and other non-traditional scholarly outputs in academic review, promotion, and tenure in Canada and the United States,” by from Alperin, J. P., Schimanski, L. A., La, M., Niles, M. T., & McKiernan, E. C., 2022, in A. L. Berez-Kroeker, B. J. McDonnell, E. Koller, & L. B. Collister (Eds.), *Open Handbook of Linguistic Data Management*. MIT Press.

Table 5.34 presents a checklist of criteria for evaluation—in the form of questions—that may be considered by tenure and promotion committees and for scholars engaged in open or non-traditional forms of scholarship applying for promotion. They were derived from suggestions posited by scholars, professional associations, and found in the University’s tenure promotion documents.

Table 5.34

Criteria for Evaluating Open/Non-Traditional Scholarship

Description	Criteria for Evaluation
<p style="text-align: center;">About the Authors and Collaborators</p> <ul style="list-style-type: none"> - Evaluation for scholarly promise and opportunities for further development - Evidence of self-reflection and self-critique on all stages of the process of discovery and development. 	<ul style="list-style-type: none"> - Who is the author(s) and/or collaborator(s)? - What are their roles and time commitments? <ul style="list-style-type: none"> ○ Author(s) or collaborators of content ○ Collaborators of functional/technical content ○ Genesis, development, execution.
<p style="text-align: center;">About the Work: Project and Content</p> <ul style="list-style-type: none"> - Awareness of best practices and standards, dissemination, and assessment plans of that discipline - Description of differing decisions during a multi-phase project - Ways in which the project(s) is not possible to execute in the print medium - Evaluated qualitatively as a whole. 	<ul style="list-style-type: none"> - What is the purpose of the work? - Who is the intended/anticipated audience? <ul style="list-style-type: none"> ○ Support digital pedagogical objectives ○ Research or methodological approach ○ Contribution and advancement to knowledge in field.

	<ul style="list-style-type: none"> ○ Experimental project ○ Development of a platform/software for future use. - How do you know how the work will be used? - Is it a large- or small-scale project? - What is represented in the work and why? <ul style="list-style-type: none"> ○ What selection and deselection process are used? - What kind of enrichment to the content has been added and why (e.g., commentary, annotations, multimedia, etc.)? - How will the work be used—scholarly or teaching? <ul style="list-style-type: none"> ○ What is the anticipated scholarly or teaching impact? - How is it experimental and/or innovative? - What is the potential of the medium to the project?: Richness of design, content and depth showing complexity—structure, multimedia enhancement, commentary, essays, annotations by readers/project members, licensing considerations.
<p style="text-align: center;">Interface Design and Accessibility</p> <ul style="list-style-type: none"> - Viewed in its native environment - Digital language used is best suited for the project and its purpose. 	<ul style="list-style-type: none"> - Is the work accessible to its intended audience (students/community)? Was usability design and testing considered? - Does it have an interactive interface? - How long has it been accessible? <ul style="list-style-type: none"> ○ Provides a history of the digital project - What is the current version submitted? - How is the work updated? - Is there commentary/feedback available? <ul style="list-style-type: none"> ○ Formal or informal (including teaching evaluations, assessment plan) ○ Registered / unregistered users? ○ Experts in the field? - How is the content updated?

	<ul style="list-style-type: none"> - Has the interface been assessed? Were the following conducted: needs analysis, usability testing, user modelling, and design experiments?
<p style="text-align: center;">Technical Design</p> <ul style="list-style-type: none"> - Sustainability over time—flexible information infrastructure and iterative improvement for adaptation, including usability by future generations - Documentation for maintenance - Systematic usability testing for interface design, user modelling, needs analysis <ul style="list-style-type: none"> o Design experiments - Publishable content. <p><i>Note:</i></p> <ul style="list-style-type: none"> - System designed for unexpected research use may only be for expert users vs accessible and engaging interfaces for novice users - Funding derived may not cover both instances stated above - Documentation may cover either interface design or technical design—not both. 	<ul style="list-style-type: none"> - What delivery system was used? <ul style="list-style-type: none"> o How were they developed? o Can they be easily adapted and maintained? o Has it been tested—by design experts or internally tested by team - Is the work interoperable with other digital resources? - Is it robust and appropriate? - Is it well documented? - How will materials be added?
<p style="text-align: center;">External funding: Grants and fellowships</p> <ul style="list-style-type: none"> - May serve as an alternative form of peer review - Review of the project and track record of Principle Investigator (PI). 	<ul style="list-style-type: none"> - Did creator(s) receive competitive funding or tried to apply for funding? - What level of development was anticipated based on funding?
<p style="text-align: center;">Review by Experts/Consultants and/or Student Evaluations</p> <ul style="list-style-type: none"> - Multiple reviews and over several review cycles - May serve as a “formal” peer review option – to contextualize the work (e.g., NINES, etc.) - Reviewers from comparable institutions 	<ul style="list-style-type: none"> - Are there reviews by experts available for the following? <ul style="list-style-type: none"> o Encoding schemes o Technical infrastructure o Disciplinary centrality

<ul style="list-style-type: none"> - Hosting sites conduct peer review and dedication of resources - Online journals with review mechanism e.g., Vectors, Hyper Pedagogy, etc. <ul style="list-style-type: none"> o To provide academic context of a project - Project's participation in conversations of the discipline and it is in turn described and linked to by others - Creation of tools to create learning objects - Web metrics are a powerful early days estimate of citation impact. 	<ul style="list-style-type: none"> o Online journals o Awards, Recognition and Citations o Measures against other similar projects. - What metrics have been used to measure impact or influence? <ul style="list-style-type: none"> o Editorial Board o Downloads / views o Circulations stats o Links from and to the site, trackbacks o Tracking conversations/comments via social media tools o Sharing slides, videos about project, etc. o Number of contributors o Invitations to publish in journals/magazines/books o Invitations to present at conferences - Learning and Teaching – used in real circumstances? <ul style="list-style-type: none"> o An assessment plan related to teaching, learning objectives (learning knowledge, pedagogical innovation (e.g., software) o Results of evaluation - Use or adoption of project by other scholars, institutions, and in curricula - Impact on public policy, etc. - Moving the scholarly field forward - A maximum of six letters from external evaluators
<p style="text-align: center;">Alternative Impact Measures</p> <ul style="list-style-type: none"> - Limitations for travel, opportunity for candidates to present to colleagues 	<ul style="list-style-type: none"> - Has work been presented to peers (department, university, regional, national, international, solo,

<ul style="list-style-type: none"> - Measures of influence may include: <ul style="list-style-type: none"> o Relevance to daily life, local, global communities - Membership on tenure and promotion committee may include outside expert with standing (from the community, evaluators from comparable institutions) - Measurement for collaborative roles played in other projects - Outputs have sustained investigation on a particular topic 	<p>group, in person, online, invited or juried, formal or informal)?:</p> <ul style="list-style-type: none"> o Conferences, symposia, museum exhibitions (including curations), teleconferences, interviews about research, webcasts, podcasts, video blogs, and other forms of archival media, interactive performances, social software, posters, etc. o Has contributed to working papers, technical reports, book reviews, editorials, essays, open peer-review article to self-policing publication networks, newspaper, or journal editorials, etc. <ul style="list-style-type: none"> - Had collaborative roles on other projects?: For example, edited volumes, managing or coordinating multi-user discussion list, film festivals, networked databases, conception, and design of projects, etc.) - Evidence of citations in other university syllabi. - Participates in online discussions: <ul style="list-style-type: none"> o Number of subscribers, geographic scope, number of replies triggered by a given contribution - Letters of recommendation from identified figures in a field of expertise - Evidence in teaching: <ul style="list-style-type: none"> o involving students in collaborations with real world experience, may have commercial or artistic value o offering independent studies when students want to explore outside of current syllabus
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<p>Preservation - Standards in Appropriate Field (e.g., Museum and Archives, Getty Data Standards & Guidelines, TEI Encoding Initiative, etc.)</p> <ul style="list-style-type: none"> ○ Accessibility ○ Formats ○ Reusability ○ Deposit plan ○ Hosting site – e.g., university repository provides preservation utilities that are well maintained. ○ Preservation and archival ○ Documentation 	<ul style="list-style-type: none"> - Is there a long-term preservation plan? - How will it be accessible in the longer term? - Why choose an open source or proprietary platform? - Where is the project hosted? Is there a mirror site available? - Was the content digitized according to archival standards? What choices were made? - What guidelines were used when encoding text?
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Chapter Summary

In this chapter, I presented an integrated joint analysis of the data gathered from the two phases of the study. I focused specifically on faculty members' open intentions and their engagement with open initiatives; their use of social media, online networks profiles, dissemination strategies; and finally, tenure and promotion as it relates to types of research and teaching outputs they frequently produce and how well individuals perceived they aligned with faculty evaluation procedures. I have also included a checklist of criteria for evaluation—in the form of questions—that may be considered by tenure and promotion committees and scholars engaged in open or non-traditional forms of scholarship applying for promotion. In the next chapter, I will discuss the findings from the study and provide scholars and university administrators a path forward with a view to creating a diverse, inclusive, an equitable culture around faculty evaluation that melds the best of the current practice with consideration for the new and expanding developments in scholarly communications behaviour and publishing practices.

Chapter 6:

Discussion and Conclusion

In this study, I focused on understanding whether openness in scholarly communications and publishing practices—often amplified by advances in technology—had motivated any changes in (a) the behavioral and scholarly practices (namely types of research and teaching outputs and channels for dissemination) of scholars in the target population, (b) their experiences in adopting these strategies, and (c) the impact these practices have had on tenure and promotion practices at the University. I was interested in challenges faculty experienced or encountered when adopting new practices and if these practices had eventually led to changes in faculty evaluation practices across campus. The following research questions were used to guide this study: **RQ1**—what forms of open scholarship do tenure-track scholars practice?; **RQ2**—are some forms of communities of practice more prevalent in some disciplines?; **RQ3**—did these new forms of scholarship straddle all domains of scholarly practice (e.g., research, teaching, and service)?; **RQ4**—what challenges did scholars face in disseminating research using new and emerging forms of scholarship?; **RQ5**—what is the impact of open scholarship practice on the University?; **RQ6**—what benchmarks exist for evaluating these non-traditional forms of scholarship; **RQ7**—what strategies and considerations need to be addressed for implementing changes at the University?

A phenomenographical and mixed methods approach was used to acquire a subjective understanding of the impact open scholarship practices have had on the scholars, and tenure and promotion practices at the University. The study was conducted in two phases: Phase 1 including an online survey, individual in-person semi-structured interviews, and Phase 2 a content analysis of selected University's tenure and promotion documents. Six themes, (aligned to the research questions they address) emerged from the study that highlighted participants scholarly practices and behaviour (ways and means of doing research), use of social media platforms, open intentions and initiatives,

accountability and transparency of University policies and guidelines, types of research outputs produced, and criteria for faculty evaluation. Based on the implications from these findings, five recommendations were offered for enacting change: establish administrative accountability, make all tenure and promotion documents openly accessible, broadly define scholarship, broaden the scope of impact, and develop a values-based framework model for assessment. What follows is a thematic discussion of the findings, limitations, recommendations for further research. The relevant research question, or questions if multiple, are mapped onto each theme. Five recommendations are then provided for university scholars and administrators to consider for implementation.

Discussion

Theme 1 — Access to Scholarly Resources and Tools for Scholarly Research (RQ 2 and 5)

Access to scholarly resources for research and teaching is “vital,” “critical,” “very important,” and “crucial” (multiple participants). The University library databases and catalogue are the major tools (86% and 64% respectively) used for searching for scholarly content—its “just faster and easier to find [resources and] appreciate the searchability” (Professor). Google Scholar stands as a close second (81%) in this space. Assistant Professors overwhelmingly (95%) gravitate towards Google Scholar, while Professors use library databases (87%) and Google Scholar (87%) equally. As early career researchers, Assistant Professors may feel the need to be more expansive in their research strategies and implicitly understand that Google Scholar seamlessly links to the University library’s subscribed content. Assistant Teaching Professors (88%), on the other hand, tend to use the library databases regularly for their research and teaching needs—they are familiar with the resource, the content is suitable for their teaching needs and includes fulltext content, and personally, they have limited time at their disposal for research activities, so ease of access is an important criteria (Assistant Teaching Professor A).

As an indexing tool, Google Scholar seems to be trending towards eventually surpassing the need for libraries to provide the same services. After all, it seamlessly indexes the commercially published and open content on the web—convenience is what seems important to scholars. Since the library databases and the library catalogue do not index the web, it may be better to just provide the Google/Google Scholar search options. It was interesting to note that SciHub was mentioned when the University library has an expansive collection of resources—I wonder if faculty were motivated by the convenience of finding resources they needed in one place.

Scholars seem to expect the institution to provide access to a wide range of scholarly content—the inability to access core journals for their research “would be totally debilitating” and they felt it would similarly impact the University’s ability to attract highly qualified candidates—it “would be a reason someone would choose, as a new faculty member, not to go to a university” (Assistant Professor C). Conversely, having too much access has the reverse effect—for example, graduate students may be overwhelmed by the amount of scholarship available that prevents them from “actually working on stuff” (Professor H). Under these circumstances, graduate students may benefit from acquiring some advanced research expertise in utilizing a systematic and iterative approach to identifying and synthesizing existing and emerging bodies of literature (e.g., systematic reviews or scoping reviews).

Efforts made by the libraries and archives sector towards digitizing resources previously stored in closed stacks and inaccessible to the public are eliminating, to a large extent, extensive and expensive trips to these locations for research purposes. In addition, digital access to historical materials, has meant that there are new ways for conducting research (e.g., text and data mining), revealing new data, and new avenues and pathways for research:

I would say my entire academic career has been changed, its trajectory has been changed by technology ... the current project is actually starting from online sources ... found that this research has changed our ideas that we went in with. (Professor K)

These results confirm the findings in Rutner and Schonfeld's (2012) study about how historians' interactions with primary materials from archives have changed significantly—it is easier to “locate, access and work with digitized materials than ever before” (p. 14), and it has reshaped careers and research processes (Neylon, 2017). Access to digital content, whether through digitization of primary materials or via born digital content has meant that researchers appreciate the searchability within the content, the use of “text and data mining to do research on policy decisions” (Associate Professor) or finding new areas for research, and having the added convenience of knowing that a “whole class can be using it at the same time” (Associate Professor). When using open content for teaching, however, one must be aware that the content “gets edited, it's hard to curate” (Associate Professor O). Frustratingly, when content is not open access they are “grappling with chapters out of books” and facing copyright challenges. Access to subscribed content and openly accessible content is of primary importance for both research and teaching needs.

Though I offered faculty a smaller choice of tools in the survey compared to those found in Bosman and Kramer's research study (2015, 2016), faculty mentioned other tools they used in the comments. They seemed to usually use a package of tools licensed through their University (Word and Excel), tools available on a specific operating system, and various open source tools and platforms (e.g., Open Science platforms, Zenodo, SlideShare, Github, Open Lab Notebooks, and YouTube, etc.). They prefer Google's collaborative tools when working on research projects with community partners or because other researchers in their field participate and share information or data in these spaces.

Theme 2 — Adoption of Open Intentions and Initiatives (RQ 1, 2, 3, and 4)

It was evident from the study's results that faculty (Assistant Professor C, Associate Professor D, Associate Professor N, and Assistant Teaching Professor P) across the ranks philosophically support open initiatives—they “belief in the democratization of data and publishing in open venues,” are a “proponent and advocate for open access,” and are “very much about wanting to publish my research only in open access journals” (see Table 5.30). Between 74%-88% of faculty responding to the survey support several open initiatives: open software, open licenses, and open access. Open data (63%), open education (57%), open science (50%), and open government (49%) initiatives were supported to a lesser degree. The Tri-Agency in Canada released its open access policy on publications in 2015 and this may be the reason that faculty support open access more than the other initiatives. The Tri-Agency's open data policy would only be released a few years later and open education initiatives were beginning to gain momentum.

Some faculty have been disseminating course notes and pre-prints of articles, creating an open textbook, and editing an open access journal, presenting a draft of chapters for a book, and making software and code available in open venues, thereby making them accessible to the public. They also showed their support by resisting tools that are owned by publishers who “close off the *garden* to others” and chose to use collaborative tools (e.g., Google suite or cloud-based operations) when working with multiple stakeholders. One faculty declared that

the driving principle of my scholarship has become open access ... we are paid by the public by taxpayer funds ... we have a profound obligation to make it available not just to people who have subscription databases or can get to an academic library, but to the whole world.

(Associate Professor D)

Their actions or intentions are based on the principle or philosophical stance that

knowledge is built on prior knowledge, so access to information is essential. The development of digital technologies introduced new channels of communication and information distribution, having unleashed new ways of accessing scholarly outputs, and making it possible to open up research. (Ferreira, 2023)

Those who worked on community-engaged research projects felt that the University had an obligation to society to make research available to everyone—they declared that “knowledge should not be guarded” (Assistant Teaching Professor B) and the “social commitment of universities [is in] contributing to social justice” (Assistant Professor S). Another participant preferred not to share information about their teaching outputs online until they had permanent status but would share with colleagues in the department or on a network dedicated to instructors (Assistant Teaching Professor B).

Evidence from the interviews suggests that faculty in multiple disciplinary areas have conducted community-engaged research and that these projects have produced new types of scholarly outputs—reports, videos, documentaries, digital mapping projects, curriculum guides and resources, etc. (Assistant Professor S and Associate Professor F). Although these projects have been celebrated, this type of scholarly activity was not acknowledged in some of their department’s tenure and promotion guidelines (Associate Professor M). One faculty member was confident, however, that the culture was slowly starting to change. Since the University’s strategic plan and the collective agreements had statements referencing community-engaged scholarship, it is surprising this change is not already reflected in all faculty and academic unit evaluation policies.

As scholars work with community partners, they have become increasingly aware of the fact that the large corpus of scholarly resources available to those at higher education institutions are not accessible to those outside of academia— “you can’t take taxpayer money and then put it behind a firewall; it’s just wrong” (Associate Professor M). Despite their awareness of the principles of open

access or open science and the accompanying rapid developments in new scholarly communications channels for disseminating research, faculty face some cultural and economic challenges in adopting and achieving their open intentions. For example, they do not have adequate funding to pay the fees publishers charge (between US\$1,500 to \$8,000) to make their articles open access upon publication. In addition, the high impact journals of their fields, one interview participant lamented, are all subscription-based journals (Assistant Professor C). Tenure and promotion policies require publication activity in high impact journals (Agate et al., 2020; Knapper, 2003; National Research Council, 2003; Riddell, 2016; Wolff-Eisenberg et al., 2016). Some disciplinary areas may not include open access journals that have high impact factors. Faculty are also aware that their graduate students need to publish in high impact journals because that is how their applications for future academic positions will be assessed. Instead, faculty are waiting to get tenure before making changes in their publishing practice. Another faculty member was “suggesting a mix of ... open access publications on reputable websites” for their own career and that of their students (Professor K).

Faculty encounter conflicts when making decisions on how research funds are spent—do they spend it on open access APCs, or do they use the funds to hire graduate students? Article processing charges for two open access articles limits their ability to hire a graduate student for a semester—“It costs \$2000 [each] to publish open access, ... [for] two open access publications ... I could hire another student ... that’s the other big barrier” (Assistant Professor C). The needs of their students often take precedence. In this context, they felt concomitantly bound by pressures from the University’s very traditional and long-standing practices to publish in high impact journals that sometimes ran counter to the expectations from external funding agencies’ open access policies and their personal and professional intentions (Alperin et al., 2019; Arthur et al., 2021; Moore et al., 2017).

During the interviews, I discovered that early career faculty were not aware that they could meet their funding agency mandates by depositing the post-print or accepted manuscript version of

their articles in the University's institutional repository. The Canadian Tri-Agency open access publications policy was introduced in May 2015 and early career faculty may not have been aware of this change in policy. Nevertheless, they were excited to hear that they could archive the accepted version of their manuscripts in the institutional repository and have it accessible to their community partners and achieve compliance with funding agency requirements. Those who were aware of the mandate did not have the time or did not consider it a priority when judged against their other responsibilities (Professor H). Even with mediated deposit options available from the University library, they did not have the time to take up the offer unless it was *baked* into their workflow and routine (Professor H and Associate Professor M). They preferred to have such initiatives integrated "at a program level ... make it a practice ... institutionalize it" (Professor H). Interestingly, they tended to archive their publications on their personal websites (50%) rather than in the University's institutional repository (38%). This preference may be associated with what they were required to accomplish by their departments—it is a part of their workflow that has been *institutionalized*.

It is important to note that the Tri-Agency's open access publications mandate (Government of Canada, 2016a) does not include funding for the creation and dissemination of open educational resources for use in teaching. Since education is a provincial responsibility in Canada, scholars who want to produce open educational resources do not have access to federal/national funding similar to that available to scholars conducting research. Some provincial governments have provided funding for the creation of open education resources through organizations like BCcampus (n.d.), but in some provinces this funding has been inconsistent rather than ongoing. Nevertheless, there has been a groundswell of activity in this area across the country (Aesoph, 2019), with some funding provided by enlightened university administrators and by university libraries who want to address the economic barriers to learning.

Data sharing was not mandated at the time the survey was issued and scholars may not have been familiar with some of the sites listed or how “they might apply.” I suspect that some were (a) not ready to share their data because they were still publishing articles using the data set, (b) cleaning data for public/open consumption takes a great deal of time, and (c) this activity was not part of their normal research workflow yet or was not pertinent (64%). Since this survey was conducted, not only have publishers requested that scholars archive data related to their publications in a data repository, but major granting agencies have mandated that research data be made publicly accessible (Government of Canada, 2021).

Although faculty may be utilizing open tools or open infrastructures, they did not create a digital preservation strategy for their research projects. This would also apply to information technology infrastructures provided at their University (Associate Professor F). Researchers needed to acquire long-term funding to support the development and resourcing for collaborative or community-engaged research projects. They also require time and resources to undertake major backups and migrations to new servers. In addition, the use of open software tools has major implications for the long-term viability and sustainability of their digital project. It was apparent to me that faculty may not be aware of the availability of campus information technology infrastructure resources for large scale projects or the possibilities of making data openly accessible to undertake intersectional research with campus colleagues (Associate Professor M).

Scholars open sentiments expressed in this section echo the values expressed by Daniel Gilman at the inauguration of the Johns Hopkins University Press in 1878.

Evidence from the Phase 1 of the study indicates that faculty across the ranks philosophically support open access principles but faced many challenges in achieving these goals. They

- do not have the funds to pay the open access article processing charges (APCs);

- often made decisions to channel their research funds to support their graduate students—a decision that was at odds with their open intentions;
- departmental expectations for publishing in highly reputable journals may not necessarily support their open ideals;
- archiving their scholarly works in the university’s institutional repository was not of primary importance if the workflow was not “institutionalized.”
- data sharing did not register as a key aspect of their open intentions; and
- faculty they did not have a digital preservation strategy for their online projects and funding to support this aspect of their projects.

Open scholarship represents a starting point towards a scholarly landscape that is diverse and inclusive, and one that can work alongside traditional scholarly practices. The principle behind open scholarship is supported by scholars at the University (Assistant Professor C,D,N, and P) and “rooted in an ethical pursuit to democratize knowledge production and dissemination via public online venues” (Veletsianos & Kimmons, 2012b, p. 168). Any use of open tools or open practices may, however, be tempered by new challenges and tensions. For example, scholars may not always have a choice of publishing in a high quality open access journal (i.e., with a high journal impact factor) in the discipline, so they (especially early career scholars) have to withdraw from their intentions to publish in open venues, and publish in closed access journals instead (Assistant Professor C). In choosing the latter option, scholars or their institutions may be faced with paying exorbitant publisher APCs to make the scholarly work open access. Scholars who do not have research grants or very little external funding to publish their scholarly work in open access journals find themselves in an inequitable situation. In addition, tenure and promotion guidelines stipulating that scholars keep to a particular publication output schedule (e.g., more than one article a year) may create further tensions and challenges.

Institutions should question who benefits (profits) from this practice and how they safeguard the *value* of scholarly inquiry ((Veletsianos & Kimmons, 2012b, p. 178).

At the time of this study (in 2019 and before COVID-19), many of the scholars did not see the need for sharing their work on open platforms or thought that it *was not pertinent*. If they engaged with open platforms and tools, it was likely to occur before they achieved tenure, after which they considered engagement on these platforms of less importance. Scholars occupying temporary, contractual appointments tended to hesitate to post their materials online because they “don’t want to lose that thing which makes [them] special” (Assistant Teaching Professor B). They will share the material with their students and with colleagues privately, or on a closed network, until the opportunity arises to post the material more widely. Early career teaching stream faculty are also discouraged (by colleagues) from conducting research as their evaluation ratio has a typical 80:20 split; it did not include research (assistant Teaching Professor W). Another scholar (Assistant Teaching Professor A) who had produced an open textbook felt that this activity would not be considered under research, as books and book chapters were, but relegated to the teaching category instead. They felt that it may be the “most pragmatic way to do the evaluation for merit.”

Another example of when disruptions to open intentions and practice occur is during scholar collaborations with partners in the community. Tenure guidelines do not always consider the length of time it takes to bring a collaborative project of this nature to fruition, and in most cases the published outputs are only shared with the community. It is understood that ethical protocols have to be considered and acknowledged and intellectual property in the published content belongs with the community and not the scholar. Any published content (in the form of a report) will have to be negotiated with the community well in advance. Even under these circumstances the scholar is expected to produce at least one peer-reviewed research output a year (Associate Professor F).

In another case, a scholar (Associate Professor D) who works in a solely digital environment has to create extensive documentation to prove the value of their scholarship, mainly because there is no publisher proxy available (i.e., established channels for assessing journal articles) for non-traditional types of digital scholarship projects. This was particularly surprising when there were assessment guidelines for digital scholarship projects at the disciplinary level. Another scholar indicated that the “most contentious thing ... [is] not the production of the digital resource ... but the versioning ... I feel that there is still a lack of recognition for the constant upkeep of a resource (i.e., to keep the project running, up-to-date, and functional) ... I see a gap in our research policies” (Professor K).

These challenges illustrate the need for scholars and administrators to consider where ideals for the democratization and equality fall short. Any changes in the current evaluation processes at the University should consider inequities resulting from simply mapping traditional evaluation practices onto the ideals proposed by open scholarly practices and the outputs resulting from them.

In reflecting upon my own process and intentions for dissemination, the ethics approval did not incorporate open data, which now delimits sharing anonymized survey data. It takes time to review the data from three separate studies and having a data management plan that addressed each type of data, which may have differing levels of appropriateness for open data, would be essential. At the time that I applied for ethics approval for my research there was no requirement by the Human Research Ethics Board at the University of Victoria to create a data management plan and to make the data available for further research. Now, however, researchers are encouraged to make their data available (fully open or partially open) for further analysis and verification through their peers (Government of Canada, Panel on Research Ethics, 2023). Data management plans are now supported through repositories and open licensing is built into the process. This would have enabled me to explore options to include parts of the anonymized data as an open data set, where currently all the data remains private.

Theme 3 — Use of Social Media and Social Networks (RQ 2 and 4)

At the time the study was conducted in 2019, it was evident that social media platforms, especially Twitter (45%), played a key role in faculty scholarly communications and publishing practices by providing new channels and opportunities for the dissemination and engagement with research findings and teaching activities. It is important to note that these digital platforms are public but not openly licensed products. Assistant Professors (78%) used Twitter more than faculty in other rank categories. They also preferred LinkedIn (67%) over ResearchGate (50%). This data may confirm the perceptions of a couple of interviewees who said that these networks may be used more by those who are focused on boosting their careers (Assistant Teaching Professor B and Professor K), while the other tools were used to share their research, learn about others' research, to find research collaborators, for recruiting graduate students (Associate Professor N), and sharing the work of others in the field they are closely affiliated with (Assistant Professor C). Conversely self-promotion is not a practice that is encouraged when working with community partners—instead, it was more appropriate to highlight the achievements of others.

Although tenured faculty do not necessarily use social networks to enhance their own careers, they promote its use among their graduate students. Faculty chose ResearchGate (41%) over the other social networking tools listed in the survey. Professors tended to use ResearchGate (59%) more often. Associate Professors, on the other hand, tended to use Facebook (59%) slightly more than they used Twitter (50%). Data in my study contradicts the results in the Van Noorden study (2014), where ResearchGate was found to be more popular (88%) when compared against Twitter (26%).

Although faculty had accounts on multiple social networks, they did not spend time maintaining them. After registering for an account on a network "one is inundated by emails"—these are "not helpful" and "time is a factor" when engaging with them (Professor J). They were annoyed by the frequent emails they received from these social media platforms. These reactions were similar to those

expressed in previous studies (Gruzd & Goertzen, 2013; Gruzd et al., 2012). Some faculty felt the pressure to use them before attaining tenure (Associate Professor F) or because of pressure from within their research community.

One cannot say how much the use of Twitter may have changed since the switch in ownership and business practice on the X platform. A Pew Research Center (Faverio, 2023) survey found that users are either planning to take a break from the platform or will not likely be on the platform in the future. While new platforms like Threads, Mastodon, BlueSky Social, Spill, Discord, and Reddit have emerged, they serve different communities and were setup for different purposes (Henshall, 2023). Individuals will probably find their groups on several platforms. No one social media tool has, however, taken the lead with mass migrations. The shifts in the adoption of Twitter has highlighted how vulnerable digital tools are to the vagaries of their owners. Thrown into this mix is the fact that Mastodon is an open source platform/model and is not proprietary.

Regardless of the specific tools used or the reasons for their use, the shift towards the use of these tools has brought with it unforeseen challenges, such as trolling and online harassment. Faculty expressed major concerns from their own experience and what colleagues had encountered: harassment, the level or type of harassment, and the emotional fallout resulting from it (Professor K, Associate Professor D, Associate Professor F, and Assistant Teaching Professor P). For example, scholars were attacked by other academics because their scholarly methodologies were not consistent with traditional methodological practices (Assistant Teaching Professor P), some were attacked via their personal emails, as well as through their academic units (Professor K), and hate language was used to attack anyone conducting research with specific communities (Associate Professor F). These challenges confirm those expressed in earlier studies (Carrigan, 2016; Cottom, 2015b; Jordan & Weller, 2018; Rojas, 2015; Veletsianos, 2012; Veletsianos & Kimmons, 2012c). These acts of harassment have not only continued but may have intensified due to a political climate that is emotionally charged.

As a matter of recourse and engagement, some interview participants responded to these attacks in diverse ways: they attempted to have discussions with these individuals on the issues, outed them for their inappropriate responses, and/or ultimately shut down their professional social media accounts (Associate Professor and Assistant Teaching Professors). The emotional down draft experienced by the individuals who were attacked and those who encountered these acts of harassment and discourse is no small matter. Some of these attacks may be the result of overtly strident *voices* used to communicate on issues (Assistant Professor S). One interviewee indicated that they tempered how they communicated on politically charged issues and seemed to have received little or no repercussions. It may be beneficial for university libraries and communications departments to collaborate on providing tutorials, invite respected individuals from the field to raise awareness of the issues, and create best practice guidelines for the campus community to learn about the tools and how they can manage their social profiles to effectively promote their content. Instructing faculty and students on how to intentionally establish personal and professional boundaries in their conversations and maintaining a particular image for each community are crucial strategies (Veletsianos & Kimmons, 2012c).

What is alarming is that commercial vendors and publishers are gradually purchasing social media platforms and have accumulated vast amounts of user data as they venture into the information analytics or intelligence business (Shockey, 2021). This latest development portends a trend towards the infiltration of their surveillance products (i.e., where online tracking technologies are used to aggregate user data) into library database products. Vendors and publishers convening in these spaces are incentivized to monetize user data they have collected to resell it to universities in the form of new products (Shockey, 2021).

In addition, university communications departments and the University's Research Office should consider creating best practice guidelines when communicating university research to the public. Yes, it is wonderful to have the prospect of raising the University's profile through its scholars and their

associated high profile research, but it is also important that the same scholars are not tapped on multiple occasions (due to their gender and/or work in specialized fields) and to consider privacy (the sensitivity of the projects) and the dissemination strategies that scholars and their community stakeholders have agreed upon. In the same vein, University and department administrators frequently tap members from a select group of scholars, based on their gender, race, or other criteria, to handle sensitive issues—the time spent on these issues and the emotional toll on the individual is usually not considered or officially acknowledged during tenure evaluations (Assistant Professor Cand Associate Professor F). Time spent on these activities may increase in scope and affect their performance in other areas.

Theme 4 — University Policies and Guidelines (RQ 5 and 6)

Except for the University's strategic plan and the faculty collective agreement, not many of the other documents were easily accessible online. These disciplinary policies should be made transparent to the whole campus and not kept secret. Schimanski and Alperin (2018) had mentioned the same concerns when they sought out disciplinary policies for their studies. How does the University ensure accountability between statements made in strategic documents and what is applied in the departmental level tenure and promotion documents. How do scholars at the University know that policies are consistently applied? It would be beneficial for more progressive and strategically aligned policies be made visible to faculty across campus. Any form of culture change around tenure and promotion cannot be improved or changed if these documents are closed and siloed. The decision to maintain secrecy around these documents ensures that we maintain the status quo and does nothing to change tenure and promotion practices across the campus.

The University recently became a signatory of the Declaration of Research Assessment (DORA), signaling its recognition of a broader range of research impacts. This move signals further shifts are likely on the horizon in terms of broadening the scope of publication outputs and shifts in culture at the

institution. Any form of system change will require “fundamental shifts in policies, processes and power structures, as well as in deeply held norms and values” (Hatch & Curry, 2020, p. 1). They will need to consider making tenure and promotion documents, at all levels, publicly accessible to ensure that the principles stipulated in DORA are applied to faculty evaluation policies. Changing how we evaluate scholarly work will take time and it will be difficult, but not impossible (Hatch & Curry, 2020).

The University’s strategic plan at the time of the study provided a framework for scholarship that was inclusive and expansive in its commitment and included the following priorities: the integration of scholarship, engaged learning, and real-life involvement; providing an environment for the creation, dissemination, and mobilization of knowledge; and calling for diverse forms of research, creative activity, and innovation. The plan also spoke to the integration of community-engaged and community-based research into learning, teaching, and partnerships. I found that the strategic plan mirrored Boyer’s (1996) definition of scholarship by overlapping functions of discovery, integration, application, teaching, and engagement. While the University’s community-engaged scholarship guidelines built upon the strategic plan’s priorities and Boyers’ principles, it also offered illustrations of scholarly outputs arising from these activities and recommended an impact rubric for assessment purposes (incorporated into Table 5.34).

In addition, the community-engaged guidelines offered an important distinction between scholarly activities that should be applied to the *service* category and those that should be applied to the *research* category in the tenure promotion evaluation process. In the latter case, a researcher had a mutually beneficial relationship with the community. Some interviewees did not experience these commitments and considerations during the evaluation process at the academic unit level. It is important to note that there are clear guidelines in two disciplinary areas (one in the Arts and Humanities and of the other in the Life Sciences), where community-based research activities are recognized as a scholarly activity and not categorized as service.

Theme 5 — Research and Teaching Outputs (RQ 1, 3, 6, and 7)

It was not unusual to find some faculty members with a scholarly portfolio that included publication outputs directed at non-academic audiences, as well as professional and creative activities directed at an academic audience (Associate Professor D, Associate Professor F, Professor G, and Assistant Professor S). During the interviews, it was noted that tenured faculty in the professor ranks were not averse to pursuing initiatives that went beyond traditional publishing practices and activities (e.g., community engagement projects or open initiatives) espoused in university tenure and promotion policies and guidelines. Neither were they judged negatively for adopting these emerging scholarly communication and publishing practices.

The advice tenured faculty gave early career faculty members differed from their own scholarly communication behaviour and publishing practices. Much of their advice was dependent on the prevailing departmental culture and its corresponding tenure and promotion evaluation practices (Riddell, 2016). Associate Professor M stated that they “wouldn’t ask someone who is an Assistant Professor to spend too much time doing [community-engaged work] till that formerly changes in the evaluation,” while Professor H had a more flexible viewpoint—“I would say just try to balance things a little bit more ... because you're early on it's better to try to somehow not to put all your eggs in one basket. Especially if it's sort of unconventional basket.” Associate Professor D said that “although a new faculty would not be discouraged from doing community-based research ... they would be encouraging them to find ways to productively document impact of that.” I was surprised to hear these limitations expressed by tenured faculty when several professional associations have acknowledged the role that digital media has made in transforming research, teaching, and service (MLA Ad Hoc Committee on Valuing the Public Humanities, 2022; Modern Language Association Committee on Information Technology, 2012, para. 2, 3). Professional associations (see Chapter 3) also advocated for new publications venues and forms of scholarly outputs, including images, sounds, data, animations, blogs,

multimedia storytelling, language documentation, grammars, dictionaries, electronic databases, Wikimedia entries, op-eds, podcasts, etc. The expectation is that faculty seeking tenure should *toe the standard line* if they wanted to attain tenure and not spend time in areas where there was not going to be much recognition for that work. It might have been this extraneous type of work that the faculty had been hired! Some of them are very intentional about doing applied research in the community—to *make the world a better place*. But they have to fit themselves into this traditional mold because these are the current departmental expectations. When the University rolled out its commitment to the United Nations Sustainable Development goals, these same faculty are expected to bend to both the traditional and the community-engaged work that had social impact. When these are added to the other roles they are expected to play at the University, it becomes a heavy burden to bear. When does disenchantment with the system set in and how long before they are discouraged by an evaluation system that does not align with the expectations at the University?

Interview participants acknowledged that community-based/engaged scholarship takes a long time (e.g., negotiating partnerships and outcomes, applying for ethics clearance, conducting the research, and creating appropriate outputs) and that it may result in fewer outputs in traditional publications. In some cases, research outputs are only accessible by their community partners. In others, the results may be used for deciding provincial or federal government land claims, they may be integrated into policy documents related to climate change, or changing teaching pedagogical practices. Faculty have been asked to appear before tribunals and have acted as the designated expert witness in legal cases—these representing examples of great societal impact. Faculty fear that the perception of tenure and promotion committees is of reduced capacity for research when it is the opposite case (Associate Professor D). Another interviewee (Professor F) mentioned that, when doing community-engaged research, they are expected to produce at least one research article per year. Although it is clear that community-engaged work should be valued, there was concern about how quality is

measured and that it was going to be challenging, but their academic unit was at the stage where it should be investigated (Associate Professor M).

Theme 6 — Criteria for Faculty Evaluation (RQ 5, 6, and 7)

Scholarship, in this study, was broadly defined and included activities pertaining to the scholarship of teaching, scholarly research, Indigenous scholarship, and community-engaged scholarship. The data derived from this mixed methods study provides all of the trends in scholarly communications and publishing practices and their impact on research and teaching (such as, inclusivity and equitable and procedural justice), and potential flexibility required in faculty evaluation policies (i.e., evaluation criteria that are open, objective, fair, verifiable, inclusive, and transparent) at the University.

Open scholarship and its concomitant practices have already arrived at the University. Evidence from the interviews indicate that scholars, in the early stages of their careers or those approaching tenure, are facing barriers and uphill tasks at documenting new channels for publications even when there is evidence that some of the evaluation policies currently in place acknowledge alternative digital outputs for tenure and promotion evaluation. Graduate students are already producing non-traditional theses and dissertations, and these are the scholars who will be demanding a change in academic evaluation policies (Amell, 2023) in the near future. Faculty tenure and promotion policies and guidelines have not, however, kept pace with these changes. As evidence in the study suggests, change is moving slowly at the University. We need to understand the social, cultural, and economic world which scholars inhabit in order to create policies and guidelines that value a variety of scholarly practices and provide meaningful forms of assessment for impact.

Scholars working in the research stream at most higher education institutions in Canada are evaluated on three basic criteria: research, teaching, and service with a typical ratio of 40:40:20 respectively—often described as the three-legged stool and where research holds the highest

importance (Agate et al., 2022). For example, one interviewee was told by colleagues, though unofficially, that for teaching you only needed to be “just good enough” (Assistant Professor C) or it was “at least adequate” (Professor J)—teaching is obviously valued less than research in some departments. The evaluation of teaching performance is broadly defined in the collective agreement as contributions to the department’s or discipline’s teaching program and to scholarship related to teaching (e.g., scholarly works, curriculum development, presentations, and contributions related to a unit’s teaching program). Although teaching stream faculty are evaluated on a ratio of 80:20, they are still expected to conduct research in order to attain tenure. They do not have any allocated time within their teaching workloads to achieve these standards. The institution should not be using performance ratios and evaluation standards that are not applied consistently across academic units.

Peer review has been an important aspect in the tenure and promotion process—it is at the heart of everything scholars do. Universities have, according to Weller (2011), customarily outsourced the evaluation of publication outputs to the publishers, effectively “removing the necessity for promotion committees to assess the quality of the outputs themselves” (p. 131). University administrators and scholars should, as part of redefining tenure and promotion practices, claw back control from the commercial publishers to develop new criteria that are complementary to the traditional peer review practice, but more appropriate for the assessment of open/non-traditional scholarly outputs. We need criteria that is reflective of disciplinary variance (e.g., Indigenous ways of knowing, integrating new methodologies and perspectives) and rethinking what counts as knowledge creation (i.e., going beyond the scientific peer-reviewed research article in a high impact journal). “What ought to count is peer review and scholarly merit, and not the physical form in which the text is ultimately delivered” (Kirschenbaum, 2003, as cited in Fitzpatrick, 2011, p. 7). It would be prudent, however, to retain some aspects of the current system that could be modified (e.g., article citation

instead journal citation impact) to co-exist with a newly formed set of criteria to assess open/non-traditional forms of scholarship.

Some types of projects should be assessed “independently by people who are qualified to peer review them” (Associate Professor D)—this may include the need to seek evaluators beyond the institution to acquire the best assessment. Faculty said that they were “struggling” with the question of how to measure impact—“enormous impact on a small community” versus “how many citations does this person have? ... the conclusion that we have reached is that we have to be really flexible in how we understand research impact” (Professor K). Whatever assessment criteria are created, it should endeavour to include more equitable and inclusive practices, while ensuring accountability and replication, as warranted. A narrative style assessment template, for example, could be derived from the evaluation rubric assembled in Table 5.34, for faculty who require a structured reporting template to amalgamate traditional citation metrics with context. It forms a flexible starting point for consideration—one based on a values-based assessment—with options for modification across disciplines and based on the types of publication outputs. These guidelines are not meant to be prescriptive but offer a map of shared criteria that orients the process of creation and evaluation of open and non-traditional scholarship publishing practices.

The current system does not incentivize creative and collaborative approaches for research in higher education (Cronin & Overfelt, 1995; Hurrell & Meijer-Kline, 2011; Riddell, 2016). Regardless of the stream that faculty hold, clear, diverse, and inclusive guidelines for promotion are necessary for individuals who seek to achieve progression through the ranks. Traditionally, evaluations of research performance are based on a long-established practice aligned with the journal’s impact factor and citation distributions. Developing and adopting metrics “is not indicative of an interest in measuring the alignment between research and the public, but of growing calls for public accountability” (Alperin et al., 2019, p. 3). Over time, not much has changed this practice in most disciplines (Schimanski & Alperin,

2018). In the meantime, technological advancements have exploded and have expanded the forms of research outputs created and the reach of scholars' research across the globe. Although the university's strategic plan prioritizes diverse forms of research and creative activity, innovation, and knowledge mobilization, faculty reward systems are still inappropriately restricted and have yet to fully embrace scholars' efforts for accessibility, diversity, and inclusivity in their research and teaching activities, balanced by empirical replication and epistemological neutrality.

Limitations of the Study

The scope of the study, including a mixed methods approach (i.e., survey, interviews, and content analysis of tenure and promotion documents), did not allow for a more in-depth or exhaustive study of faculty perceptions related to tenure and promotion. In retrospect, I would recommend assessing the tenure and promotion documents related to all or specific disciplines of interest before conducting in-depth interviews. It would not only provide a better understanding of the context that scholars are working in but also provide insights into designing the questions for the interviews and survey. In this study, for example, there was a larger proportion of participants from faculty members in the Arts/Humanities disciplines compared to the other disciplinary areas. Were they more interested because they were beginning to see the relevance and/or the changing landscape in scholarly communication and publishing practices in their fields? Professional Associations in these disciplines have issued benchmarks that advocate for change in tenure and promotion policies (American Association of Applied Linguistics, 2019; American Historical Association Digital History Working Group, 2015; MLA Ad Hoc Committee on Valuing the Public Humanities, 2022).

Furthermore, the quantitative portion of the study was limited by the overall population size (156 out of 800) and was therefore not large enough to compare scholarly communications and publishing behaviours across disciplines and rank groupings. There was also lower participation from the 40-59 age group of faculty members; the absence from this group may

skew the results, as they tended to utilize or may be more familiar with online tools and platforms as a matter of general practice compared to their colleagues in the other age groups. The study was also limited by the fact that scholars were asked to complete the survey (fall 2017) and interviews (spring and summer 2018) at one point in time—the opinions, perceptions, behaviours, and scholarly communication practices of the participants may have altered over the course of advancing careers at the university. Results from a similar survey conducted after the COVID-19 pandemic may have resulted in a heightened use of a variety of digital tools; it may present a vastly different scholarly communication and publishing landscape. The scope of tenure and promotion documents lacked one major disciplinary area in the Life Sciences category and the seven academic units standards guidelines within it. As a result, the results do not provide a wholistic picture and comparative study of the frameworks of assessment used across campus.

Suggestions for Future Research

Phase 1 of the study also did not include participants from the Associate Teaching Professor and Teaching Professor ranks at the University. There was also lower participation from the 40-59 age group of faculty members; the absence from this group may skew the results, as they tended to utilize or may be more familiar with online tools and platforms as a matter of general practice compared to their colleagues in the other age or rank groups. A future study delving into participants' reluctance to engage in a study of this nature might be illuminating.

The University's tenure and promotion policies and academic unit standards have changed twice since the primary documents were gathered for this study was undertaken. A new review could be undertaken to ascertain whether any changes have been made towards aligning tenure and promotion statements with the University's new values-based mission statement, which embraces a culture of change (taking risks, embracing new ideas and trying things in new ways) and co-creating partnerships

that are inclusive, long lasting, and are exponents of diverse knowledge systems. It may also be useful to gather documentation on how departments assess open/non-traditional scholarship and the challenges they have faced. Finally, it will be important to discover if any departments at the University had reshaped their reward systems (i.e., tenure and promotion policies and guidelines) to emphasize the use of “digital systems for the open sharing of data, knowledge, and new ideas for societal benefit ... [exposing any potential gaps] between attitudes toward open scholarship and actual practice” (Arthur et al., 2021, p. 804).

Recommendations

Implications for Scholars and University Administrators

When I started this journey, it seemed appropriate to begin with questions surrounding scholarship and how those in higher education evaluated scholarly works. The scholarly communication landscape had shifted significantly with the emergence of new and innovative technology infrastructures and solutions leading to the development of new forms of scholarship, publication channels, and collaborative activities among faculty. Faculty evaluation procedures and practices in this evolving scholarly ecosystem have not, however, kept up with the pace of change and traditional metrics such as university rankings and bibliometric assessments continue to be valued over any other methods to measure academic performance. Reasons for maintaining the status quo in the area is driven by the University’s drive to prove its worth provincially, nationally and internally—it is the only way that universities can maintain their reputation in the global rankings (Hicks et al., 2015).

Evidence from the study has shown that any changes undertaken at the University have been moderate and implemented in a few disciplinary areas. Though the University’s collective agreement and some faculty evaluation policies include a broad definition for scholarship, not all tenure and promotion documents fully acknowledge new forms of scholarship and have continued to use only

traditional *academic* criteria in the evaluation process. Unfortunately, whole disciplinary areas (Arts and Humanities) and community-engaged scholarship go unacknowledged mostly because little of their worth is represented in the criteria used for rankings measurement. Universities and scholars have seldom used alternative metrics or reward systems that emphasize the use of the “open sharing of data, knowledge, and new ideas for societal benefit, resulting in a gap between attitudes toward open scholarship and actual practice” (Arthur et al., 2021, p. 804).

In our path towards assessing the impact of scholarship using quantitative metrics, universities have lost the imperative to value scholarship “for its own worth and fostering a collaborative spirit in the furtherance of society” (Enabling Open Scholarship, 2016, para. 1). Universities seem to have lost their way from the values expressed by Daniel Gilman at the launch of Johns Hopkins University in 1878 to “advance knowledge and to diffuse it ... far and wide” (as cited in Johns Hopkins University, 2020, p. 24). Have universities lost their responsibility to and social contract with the public? In this final chapter, I am offering University administrators and scholars a set of recommendations for enacting change within the faculty evaluation ecosystem. Appropriate changes can be achieved in small steps or phases—it may be a complex exercise, but it is not impossible (Hatch & Curry, 2020).

Faculty and administrators should (a) establish administrative accountability and responsibility for change (b) make all tenure and promotion policies and guidelines transparent (c) broadly define what constitutes scholarship, research, and creative activity, (d) define the scope of impact to two dimensions—the scale of the contributions’ influence and new types of audiences, (e) develop a new values-based framework for assessment that integrates research, teaching, and service, and (f) create a central resource toolkit for administrators and faculty. I will address each of these recommendations below.

Recommendation A: Establish Administrative Accountability for Change at All Levels

It is evident from the documented process in the collective agreement and the faculty evaluation policies, that academic units have autonomy over creating and designing evaluation procedures and practices that align with the standards and norms in their disciplinary practice (Agate et al., 2022). The Provost and deans defer these decisions to faculty with permanent appointments in the academic unit. It is important that stakeholders at all levels of the University (including faculty holding permanent and temporary appointments) take responsibility and ownership—to participate in the discussion and to work together to make mindful changes to their evaluation policies and procedures. All faculty regardless of their appointment status should be evaluated by the same standards. They should be privy to the discussions that result in the final policy. Any suggestions for change should reflect the local context, acknowledge the proliferation of new methodologies and reflect the current publishing practices adopted by faculty, and align with the University's mission and values statements.

Recommendation B: Make All Tenure and Promotion Policies and Guidelines Openly Accessible

Currently, any disciplinary diversity, innovative and novel practices, and diverse approaches employed for evaluating and recognizing scholarship that exists across campus are not publicly documented and accessible by anyone outside the academic units. There was only one disciplinary area that had its academic standards accessible on the internet and they only addressed the issue of equity in teaching workloads. Some of these documents made indirect references to the value of holding the role of principle investigator on a grant but did not include evaluation criteria for the assessment of research. By keeping these documents hidden from public view, they create silos on campus and a perception that disciplinary practices are vastly different.

I believe there are base similarities and more importantly nuanced variances in how, for example, community-engaged scholarship is evaluated across campus. Some academic units consider this activity under service while others include criteria that allow them to be considered in teaching or

research. Sharing evaluative procedures and practices could create synergies in best practice guidelines for evaluation policies that would be extremely beneficial. For example, I learnt that faculty in fine arts have a great deal of experience (over 50 years!), in evaluating non-traditional scholarly outputs—providing a wealth of best practices for colleagues in other disciplines. Their non-traditional outputs have not been acknowledged through University rankings which normally depend on bibliometric data (traditional metrics) exclusively.

Recommendation C: Broadly Define Scholarship

The open scholarship movement has slowly changed scholarly behaviour and practices and brought with it challenges and opportunities for research organizations. Diamond and Adam (1993; Seifer & Jordan, 2009) described scholarship as an activity that: requires a high level of expertise, breaks new ground or is innovative, can be replicated, can be documented and disseminated, the results are peer reviewed, and has significant impact. Scholarship and creative activity leads to the creation of a variety of research outputs or products, the integration of the work into teaching, interdisciplinary or national/internal collaboration, and service to the university or community. Scholarship, in this context, should also be framed to include the University's stated principles around equity, diversity, inclusion, and accessibility in research, community-engagement, and research impact.

Instead of dividing scholarly activity into three supposedly unrelated areas of *research, teaching, and service*, the University should consider Boyer's (1990, p. 16; 1996) expanded definition of scholarship—one that integrates and weaves the full scope of academic work together, and builds bridges between theory and practice. Boyer's framework for scholarship includes five overlapping functions: scholarship of discovery, integration, application, teaching, and engagement. Many professional associations (see Chapter 3) have also issued statements and guidelines acknowledging the emerging forms of scholarship, including their associated venues for research dissemination, and criteria

for evaluation (American Historical Association Digital History Working Group, 2015; Linguistics Society of America, 2021; Modern Language Association Committee on Information Technology, 2012).

Recommendation D: Define Impact

Impact has been defined in many different ways and can be measured on several different levels. Campus stakeholders will have to define what they mean by impact, reconsider how they measure impact based on this accepted definition(s), and change faculty evaluation models to build a sustainable publishing and knowledge infrastructure. According to Tremblay (2017) the term *impact* carries many meanings. It can be

described as the effect of a project at a higher or broader level, in the longer term, after a range of outcomes has been achieved. This may include changed thinking (i.e., meaning, values and interpretations) or behaviour. Usually there is no one-to-one relationship between cause-and-effect links, but reflected in a variety of connections involving influence, contributions, and benefits – new policies deemed relevant, economic performance, competitiveness, public service effectiveness, new products and services, employment, enhanced learning skills, quality of life, community cohesion and social inclusion. Ultimately defining impact in this context is about making a difference and identifying what changes have resulted from new partnerships and collaborations. (pp. 17-18)

Impact according to Tremblay’s conceptual framework is measured on the individual, community, and systems levels. The concept is similar to that endorsed by the Knowledge Exchange (2019).

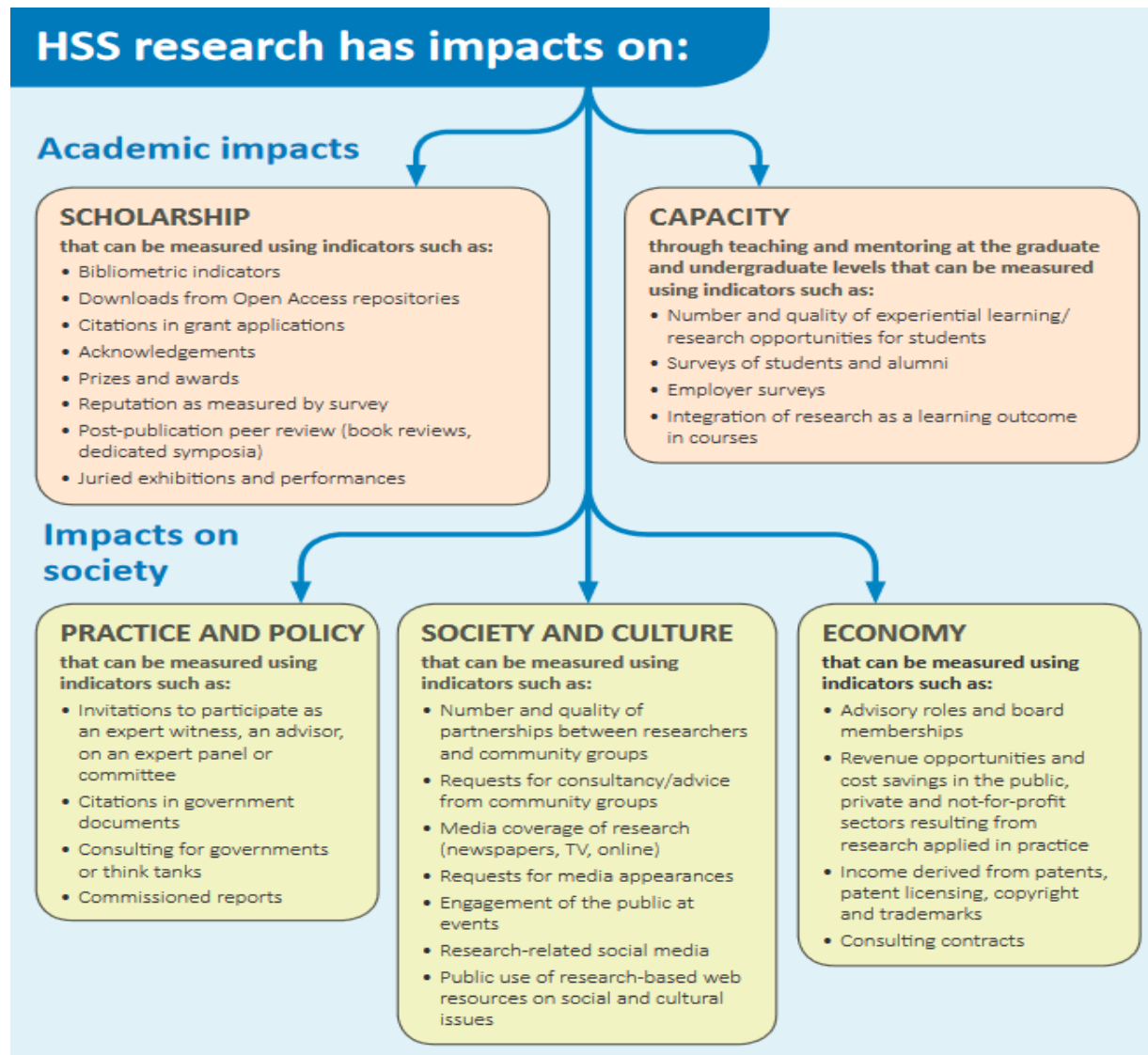
The European Union for example, defines impact as a “change or a benefit to the economy, society, culture, public policy or services, health, the environment or quality of life” (Georghiou & European Commission, 2015, p. 8). The Federation for the Humanities and Social Sciences in Canada (2017) investigated how to assess and communicate the value of diverse impacts of scholarly work to

“increase collaboration with non-academic sectors and to achieve a broad range of other benefits” (p. 4). Though the report sets out a framework describing the impacts flowing from scholarly works produced by Humanities and Social Sciences scholars, it can be applied across disciplinary areas (see Figure 6.1).

Academic impact, according to the Federation, comprises the scholarly contribution to the field of study within academia (i.e., making advances across and within disciplines, advances in understanding, methods, theory, and application), while non-academic impact refers to everything that goes beyond the academic realm (i.e., the benefits research makes to society and the economy). The pathway to impact in these cases is to first distinguish who benefits from the research and secondly, how they benefit from it (Reed, 2018). It is at the second stage when impact can be measured and it is important to note that there is no definitive time frame when impact is achieved. Although challenges exist when attempting to measure impact we have a number of approaches available to help us overcome these challenges. It will be important for the university community to share their experiences of previously successful attempts (where appropriate) and to collaboratively propose new and creative approaches and solutions.

Figure 6.1

Types of Impact for Humanities and Social Sciences Scholarship



Note. From Severinson, P., & Federation of Humanities and Social Sciences. (2017). Approaches to assessing impacts in the Humanities and Social Sciences, p. 5.

Recommendation E: Develop a Values-Based Framework for Assessment

In an article published by the Canadian Association of University Teachers (CAUT, 2018), Yves Gingras reminds us that “the rankings of universities and colleges, or the bibliometric assessment of

research impact [are] metrics being wielded by private companies, governments and administrations to measure the performance of institutions, departments and even individual faculty” (para. 1). When “universities give in to those rankings, they lose their bearings; they turn their back on their mission and let other people impose values that are not academic values” (para. 2). Moreover, Canada’s top research funding agencies do not use these rankings to review faculty grant applications.

It is much easier to rely on the metrics produced by the commercial companies when members on a tenure and promotion committee are not well-versed with an applicant’s field of research or do not have the time to delve into the context of the work. Furthermore, traditional performance metrics disadvantage “Indigenous scholars, members of equity groups, those in non-traditional career paths, as well as those who conduct unconventional research or use non-traditional research methods” (Canadian Association of University Teachers, 2018, para. 14). Faculty who are members of these communities and conduct research with community research partners produce research outputs that are not indexed in the traditional publishing venues and do not have bibliometric data to show the impact of their work. It also takes several years before any form of research outputs are produced.

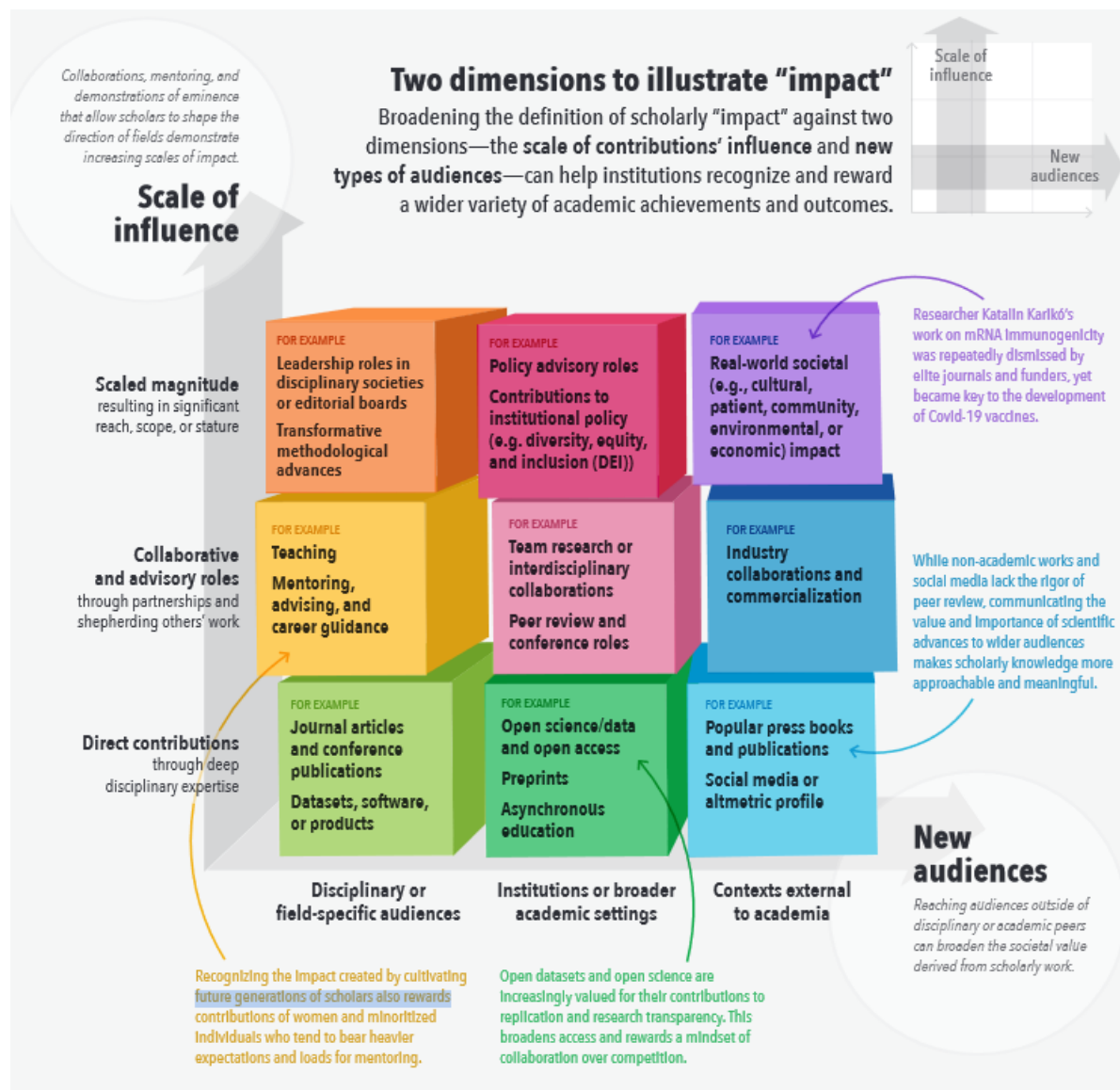
A number of new values-based assessment models have emerged to counter the traditional assessment practices. They promote the responsible use of metrics in academic evaluation. For example, the San Francisco Declaration on Research Assessment (DORA, 2012) attempts to broaden the definition of scholarly impact to include the contributions’ influence and the audiences it impacts (see Figure 6.2). The model outlines a “variety of academic achievements and outcomes that could be considered impactful,” and allows for a broader range of scholarly work to be integrated into tenure and promotion evaluation policies. Meaningful evaluation reform should include: ideas for debiasing the composition of the tenure and promotion committee, ideas for “building trust through transparency, taking a portfolio view to decision-making, fostering a diversity of opinion that invites all viewpoints, and expanding possibilities beyond historical norms” (Schmidt, 2022a, para.1). It is a useful aspirational tool

for the career academic and/or an *advocate or policy-maker seeking to develop evaluation policies and practices to recognize a broader range of scholarly work for hiring, promotion, or tenure*. DORA's resource library also includes information on debiasing the composition of the tenure and promotion committee (Schmidt, 2022b) and ideas for "building trust through transparency, taking a portfolio view to decision-making, fostering a diversity of opinion that invites all viewpoints, and expanding possibilities beyond historical norms."

The values-based framework for assessment (Agate et al., 2022; Cilano et al., 2020) is one that I believe has great potential. This framework values the end and not the means (research, teaching, and service). It does not place primary importance on the *three-legged stool* that was never balanced to start with; it is a model that will bring us back to the original purpose and value of universities espoused by Gilman—the social contract that universities hold with the public. It also brings us back to Boyer's recommendation on how we look at faculty work from all its tentacles. It tells us that we do not have to work with a one-size-fits-model framework; we need an evaluative framework that will "support and sustain an innovative, resilient and diverse society" (Social Sciences and Humanities Research Council of Canada, 2016). The model provides a framework that is "cross-fertilizing and mutually enriching" (Riddell, 2016) instead of being mutually exclusive. The study has provided evidence (Assistant Professor C and Professor G) to show that scholarly work/activity has frequently blended into each other to the point the one is not sure if it belongs in research, teaching, or service. Under these circumstances it is not easy for some scholars to report their scholarly/creative activities strictly under either research, teaching, or service—they are interrelated and feed into each other. Attribution in one area reduces its relevance in the other areas.

Figure 6.2

Rethinking Research Assessment: Building Blocks for Impact



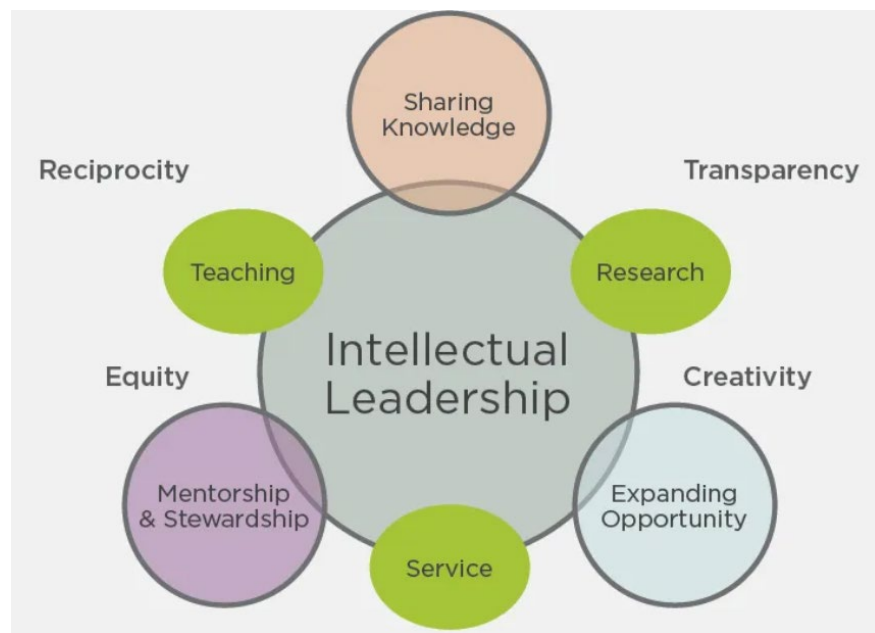
Note. Declaration of Research Assessment (DORA), & Schmidt, R. (2022b). *Rethinking research assessment: Building blocks for impact*.

Cilano et al. (2020) developed a framework called *Cultivating Pathways of Intellectual Leadership* (see Figure 6.2) that was “designed to empower members of the academic community through a values-enacted, narrative-driven, self-reflective process to imagine the contributions they

hope to make over the course of their careers” (para. 2). The model presents multiple pathways towards achieving intellectual leadership which shows itself across “research and scholarship, teaching and learning, outreach and engagement, service and stewardship” with the ultimate goal of “an integrated combination of all” (para. 4). The semi-transparent circles appearing in Figure 6.3 are the ends towards which one works and becomes the narrative drivers: Sharing Knowledge, Expanding Opportunity, and Mentorship & Stewardship. By doing these well scholars become recognized as intellectual leaders.

Figure 6.3

Values, Activities, and Outcomes of Intellectual Leadership



Note. Cilano, C., Fritzsche, S., Hart-Davidson, B., & Long, C. P. (2020, April 23). Staying with the trouble: Designing a values-enacted academy. *LSE Blog*. Copyright 2020 by C. Cilano, S. Fritzsche, B. Hart-Davidson, & C. P. Long.

None of these changes, however, can be made in isolation. Institutions will have to develop a strategy for implementing an appropriate model that is iterative and consultative.

Recommendation F: Create a Central Toolkit for Administrators and Faculty

Creating a central resource toolkit related to impact assessment that faculty could tap into will show the value the University has placed in making a “real” change on campus—one that will begin to align the University’s value statements with faculty evaluation guidelines. The toolkit should be developed to provide scholars with the tools and skills training they need in evaluating and reporting on their own work (University of Calgary, 2024a). Spending time to raise awareness, and educating scholars and administrators will be key to achieving any form of change. It will be important for all stakeholders at the University to engage in open discussions about the value of new forms of scholarly communication and publishing practices alongside traditional practices to create a level playing field especially for junior and untenured faculty who have embraced these new forms of scholarship.

The above recommendations are by no means exhaustive, nor will they address every issue raised in the study. They, however, provide a starting point for planning for change to “harness the hope, creative energy, and transformative power of faculty, administrators, and staff determined to create a better academic world” (Agate, et al., 2022, p. 5).

Conclusion

Conclusions drawn from Phase 1 and 2 of this study reflect a holistic view of the complex nature of scholarship practices and intentions that currently exist, and the structural supports (i.e., tenure and promotion policies and standards) that may advance or hinder scholars’ careers at the University. The data derived from this study provides all stakeholders (administrators and scholars) at the University with evidence of the trends in scholarly communications and publishing practices and their impact on research and teaching (such as, inclusivity and equitable and procedural justice with ideological diversity), and possible accommodations or flexibility required in tenure and promotion evaluations policies (i.e., evaluation criteria that are open, objective, fair, verifiable, inclusive, and transparent).

A phased and considered approach for change (including consultations with the faculty association and aligning strategies to university strategic directions and values, funding agency guidelines, and existing professional association recommendations) appropriate for each discipline is essential. It is also important that both the members of tenure and promotion committees and the candidates applying for promotion be provided appropriate training for the process to work well. Cilano et al. believed that

transformative change in higher education requires nurturing intertwined practices of making-with and empowering innovative ways of being together, rather than retreating to the more comfortably rewarded “self-making” that stakes out the territory of “I” within a highly corrosive competitive landscape. (2020, para. 2)

Although faculty have been using digital resources in their teaching and scholarly work, it is in the last two decades that they have gone beyond publishing in online journals. They have been utilizing other digital venues to publish and disseminating their research, contributing to open source initiatives, and working on collaborative scholarly projects that require just as much development time as the creation of the research output. The alignment of faculty academic performance assessment with institutional goals is an important step towards creating a culture that values openness, flexibility, transparency, and accountability. Defining what constitutes scholarship and impact are the first steps towards a momentum for change. By considering the different needs and perspectives of faculty across the disciplines and taking a diverse, but challenging approach towards assessment that is meaningful allows institutions to successfully implement faculty evaluation practices that recognize and reward the impact of faculty scholarship beyond the traditional markers (i.e., the distribution of citations and journal impact factor).

Theory in open scholarship is still very new and so hasn't reached its full potential. Focus on open scholarship has been "viewed as an external policy agenda imposed by funders or governments, as an ethical imperative to change the practice of our scholarship to align with changing societal needs, or as a simple re-assertion of the core values of our scholarly institutions to advance and disseminate knowledge" (Neylon et al., 2019, p. 12). There are many stakeholders in this evolving landscape and therefore different perspectives or lenses have to be considered to develop a common understanding of open scholarship. Shifts in scholarly practices are desirable, but changes in this area, as we've seen from this study, involves challenges for scholars, the communities they engage with, and university administrators. Scholars may need collective from the different stakeholders—perhaps using select communities that are positioned to lead change. Transition to open scholarship will also require low cost and sustainable publishing infrastructures. The institutions that scholars work in are very old and change very slowly. Scholars will need to work with University administrators to push for better alignment of scholarly intentions and practice and the University's mission and values.

According to the Knowledge Exchange Open Scholarship Advisory Group (2017), successful execution of change needs to not only be "collaborative, transparent, and accessible to actors and stakeholders engaged in all research related processes and across all disciplines" (p. 9), but one that includes all facets of the scholarly communication ecosystem. The framework for open scholarship and the resources gathered in this dissertation are designed to open conversations, to reduce the reticence for engaging in this second wave of change and shift towards open and non-traditional scholarship practices, and to increase both scholars' and university administrators' understanding of the nature of this type of work. Universities need to get back to value of scholarship expressed by Gilman—"enabling and encouraging intellectual endeavour, valuing scholarship for its own worth and fostering a collaborative spirit in the furtherance of society" (Enabling Open Scholarship, 2016, para. 1).

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Appendix A:
Ethics Approval

 University of Victoria	Office of Research Services Human Research Ethics Board Michael Williams Building Rm B202 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada T 250-472-4545 F 250-721-8960 uvic.ca/research ethics@uvic.ca										
Certificate of Approval											
PRINCIPAL INVESTIGATOR Valerie Irvine (Supervisor) PRINCIPAL APPLICANT Inba Kehoe PhD student UVIC DEPARTMENT Curriculum & Instruction	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">ETHICS PROTOCOL NUMBER</td> <td style="padding: 2px;">18-1004</td> </tr> <tr> <td colspan="2" style="padding: 2px; font-size: small;">Expedited review - delegated</td> </tr> <tr> <td style="padding: 2px;">ORIGINAL APPROVAL DATE</td> <td style="padding: 2px;">2018 Oct 11</td> </tr> <tr> <td style="padding: 2px;">APPROVED ON</td> <td style="padding: 2px;">2018 Oct 11</td> </tr> <tr> <td style="padding: 2px;">APPROVAL EXPIRY DATE</td> <td style="padding: 2px;">2019 Oct 10</td> </tr> </table>	ETHICS PROTOCOL NUMBER	18-1004	Expedited review - delegated		ORIGINAL APPROVAL DATE	2018 Oct 11	APPROVED ON	2018 Oct 11	APPROVAL EXPIRY DATE	2019 Oct 10
ETHICS PROTOCOL NUMBER	18-1004										
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ORIGINAL APPROVAL DATE	2018 Oct 11										
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APPROVAL EXPIRY DATE	2019 Oct 10										
PROJECT TITLE Faculty Scholarly Communication Practices and its Impact on Higher Education RESEARCH TEAM MEMBERS Ray Siemens - Committee member, University of Victoria George Veletsianos - Committee member, Royal Roads University DECLARED PROJECT FUNDING None DOCUMENTS INCLUDED IN THIS APPROVAL InterviewConsentFormAppendix E_October112018_v2.docx - October 11, 2018 Interview_Information Sheet_Appendix G_Oct2018.docx - October 06, 2018 Consent_Form_Survey_AppendixB_Aug182018.doc - September 14, 2018 Survey Questions-Appendix C_Aug182018.docx - September 14, 2018 Invitation_Survey_AppendixA_Aug182018_rev.docx - September 14, 2018 Interview invite_AppendixD_Aug182018.doc - September 10, 2018 InterviewQuestions_Appendix F_Aug182018.docx - September 10, 2018 InterviewConsentFormAppendix E_Aug182018.docx - September 10, 2018											
CONDITIONS OF APPROVAL											
This Certificate of Approval is valid for the above term provided there is no change in the protocol. Modifications To make any changes to the approved research procedures in your study, please submit a "Request for Modification" form. You must receive ethics approval before proceeding with your modified protocol. Renewals Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date. Project Closures When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.											
Certification											
This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria Research Regulations Involving Human Participants.											
<hr style="width: 30%; margin: 0 auto;"/> Dr. Rachael Scarth Associate VP Research Operations											
Certificate Issued On: 2018 Oct 11											



Office of Research Services | Human Research Ethics Board
 Michael Williams Building Rm B202 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
 T 250-472-4545 | F 250-721-8960 | ethics@uvic.ca | uvic.ca/research |

Modification of an Approved Protocol

PRINCIPAL INVESTIGATOR: Inba Kehoe	ETHICS PROTOCOL NUMBER: 18-1004 <i>Minimal Risk Review - Delegated</i>
UVic STATUS: Faculty	ORIGINAL APPROVAL DATE: 11-Oct-18
UVic DEPARTMENT: INTD	MODIFIED ON: 23-Nov-18
SUPERVISOR: Dr. Valerie Irvine	APPROVAL EXPIRY DATE: 10-Oct-19

PROJECT TITLE Faculty Scholarly Communication Practices and its impact on Higher Education

RESEARCH TEAM MEMBER Principal Applicant: Inbarani Kehoe, UVic

DECLARED PROJECT FUNDING: BC Campus 2018

CONDITIONS OF APPROVAL

This Certificate of Approval is valid for the above term provided there is no change in the protocol.

Modifications

To make any changes to the approved research procedures in your study, please submit a "Request for Modification" form. You must receive ethics approval before proceeding with your modified protocol.

Renewals

Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.

Project Closures

When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.

Certification

This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria Research Regulations Involving Human Participants.

 Dr. Rachael Scarth
 Associate Vice-President Research Operations

Certificate Issued On: 23-Nov-18

18-1004
 Kehoe, Inba

Appendix B:**Participant Email Invitation – Online Survey**

Online Survey of Faculty Scholarly Communications and Publishing Practices**Takes only 15-20 minutes!**

PURPOSE: The traditional role of the university is to create, share, and disseminate research as widely as possible. The advent of the World Wide Web and ancillary advancements in technology have not only opened up scholarship for greater access, but created a transformation in the delivery channels that researchers use to disseminate their research (e.g., blogs, YouTube, social networks, Wikipedia, podcasts, etc.). My research attempts to examine faculty behaviour and practices at the University in this new environment and its value proposition within higher education.

WHO IS ELIGIBLE: All faculty (professors, associate, and assistant professors, as well as teaching professors, associate and assistant teaching professors) are invited to participate in the study. Your participation in this research study is voluntary. Your decision whether or not to participate will in no way impact your relationship with any representative at the University. If you do decide to participate, you may choose to not answer questions and you may withdraw at any time without any consequences or any explanation. Due to the anonymous nature of the survey, it is not possible to withdraw the data after completion of the survey. The survey is anonymous. As the principal investigator, I am the only one who will have access to the data.

COMPENSATION: There is no compensation for your participation in this study, but your participation is greatly appreciated. Your input will be analyzed with that of other participants to add to the body of knowledge that that can inform institutional practices related to scholarly communication practices in higher education and what impact it may have on tenure and promotion policies.

If you have any questions please contact:

Inba Kehoe, Principal Researcher, PhD Candidate by email or

Supervisors Dr. Valerie Irvine and Dr. Ray Siemens

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria.

Appendix C:

Participant Consent Form – Online Survey

Faculty Scholarly Communications and Publishing Practices

You are invited to participate in a research study that examines the scholarly communications and publishing practices of faculty members at the University that is being conducted by Inba Kehoe, PhD candidate, Faculty of Graduate Studies.

Purpose: The traditional role of the university is to create, share, and disseminate research as widely as possible. The advent of the World Wide Web and ancillary advancements in technology have not only opened up scholarship for greater access, but created a transformation in the delivery channels that researchers use to disseminate their research (e.g., blogs, YouTube, social networks, Wikipedia, podcasts, etc.). My research attempts to examine faculty behaviour and practices in this new environment and its value proposition within higher education.

Voluntary Participation: The survey will take approximately 25-30 minutes to complete. All University faculty members have been invited to participate. Your participation in this research is voluntary. Your decision whether or not to participate will in no way impact your relationship with any representative at the University. If you do decide to participate, you may choose to not answer questions and you may withdraw at any time without any consequences or any explanation. Due to the anonymous nature of the survey, it is not possible to withdraw the data after completion of the survey. You will not be compensated for your participation in this research study.

Confidentiality and On-going Consent: This survey is anonymous. The record of your survey responses does not contain any identifying information unless a specific question explicitly asked for it. As the principal investigator, I am the only one who will have access to your identifiable data. Data will be collected and stored on a Canadian server and will be kept secured in a password protected repository. To make sure that you continue to consent to participate in this research, I will be applying the same confidentiality procedures outlined above for any future research related to this study.

Please be advised that this research study includes data storage in U.S.A. As such, there is a possibility that information about you that is gathered for this research study may be accessed without your knowledge or consent by the U.S. government, in compliance with the U.S. Freedom Act.

Risks and Benefits: There are no known or anticipated risks to you by participating in this research. There are no direct benefits to you for participating in this research. However, your input will be analyzed with that of other participants to add to the body of knowledge that can inform institutional practices related to tenure and promotion. Data collected will be used towards this research study and future related research conducted by the same researcher.

Dissemination of Results: It is anticipated that the results of this study will be shared with others in the following ways: published articles, dissertation presentation, website, and presentations at scholarly/library meetings, conferences or posters.

Disposal of Data: Data from this study will be disposed of ten years after the study is completed. The data will be held for ten years in case a changing landscape prompts the need to reexamine the findings, which may result in your being contacted again. During this time, the data may also be combined with other data and be used for future data analysis in collaboration with other researchers (e.g., graduate students, librarians, and faculty members) who sign a statement of confidentiality. Aggregated data will be deposited on UVic Libraries data server as supplementary material to publications.

Contacts: As a graduate student, I am required to conduct research as part of the requirements for a PhD degree in Interdisciplinary Studies. Individuals that may be contacted regarding this study include: Inba Kehoe, Principal Researcher by email or you may contact my supervisors Dr. Valerie Irvine and Dr. Ray Siemens.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria.

Consent: By selecting "Yes" I indicate that I understand what is required based on reading the information provided above of this study and agree to participate. I understand the information that I provide is confidential and will be used for research purposes only and consent to the future use of my data as indicated above. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty. If I have any concerns about my experience in this study, I may contact the Chair of the Human Research Ethics Board regarding my concerns.

Yes, I agree to participate

No, I decline to participate

Appendix D:

Questions for the Online Self-Completion Questionnaire

Faculty Scholarly Communication and Publishing Practices	
<p>This questionnaire is intended to serve as a way to learn more about your professional, research, and teaching oriented scholarly communications and publishing practices. I hope to use this information to gain a better understanding of the trends in scholarly communication practices of faculty at the University.</p>	
To start the survey, please tell us about yourself:	
1. Which discipline do you belong to?	<ul style="list-style-type: none"> • List of disciplines at the University
2. State your primary Department/School	<input style="width: 100%; height: 20px;" type="text"/>
3. What is your current academic rank?	<ul style="list-style-type: none"> • Assistant Professor • Associate Professor • Professor • Assistant Teaching Professor • Associate Teaching Professor • Teaching Professor
3a	<p>How many years have you occupied this rank?</p> <div style="text-align: center;"> <input style="width: 100%; height: 20px;" type="text"/> </div>
4. Indicate which age group you fall under?	<ul style="list-style-type: none"> • 20-29 • 30-39 • 40-49 • 50-59 • 60*
5. What is your gender?	<ul style="list-style-type: none"> • Male • Female • Non-binary/third gender • Prefer to self-describe. Please specify: _____ • Prefer not to say

In the next part of the survey, you will be asked to identify which tools/sites you use for various research and teaching activities.

You can skip a question if that particular research activity does not apply to you.

DISCOVERING NEW LITERATURE

Please tell us how you stay up-to-date with new research and teaching trends.

6. To which scholarly societies and professional organizations do you belong?

7. What are the scholarly or professional conferences you most often attend?

8. Which scholarly blogs or wikis related to your research interests do you regularly read?

9. Do you maintain or contribute to any blogs, website, wikis, or online collaborative scholarly sites?

Yes or No

a. What are/were your intentions for maintaining or contributing to any of the above sites?

b. Are there any challenges associated with participating in these activities?

c. Does participation in any of these activities count towards tenure/promotion?

10. What tools/sites do you use to search for literature / data / etc? Select all that apply.

- UVic Library databases

- UVicSpace
- UVic Library Catalogue
- Google Scholar
- Mendeley
- Paperity
- Other(s) (please specify)

11. What tools/sites do you use to get access to literature etc.? Select all that apply.

- Access through UVic Libraries
- ResearchGate
- Academia.edu
- Open Access journals
- Deepdyve
- Email the author
- Purchase
- Other(s) (please specify)

12. What tools/sites do you use to get alerts / recommendations? Select all that apply.

- Google Scholar
- Journal TOCs
- BrowZine
- CiteULike
- Delicious
- Mendeley
- F1000 Prime
- Academia.edu
- ResearchGate
- Other(s) (please specify)

13. What tools/sites do you use to read / view / annotate? Select all that apply.

- Adobe Acrobat
- Viewing HTML version online
- iAnnotate
- ReadCube
- UtopiaDocs
- Mendeley

- Hypothes.is
- Other(s) (please specify)

Please tell us about your social media practices as they relate to your research and teaching activities

14. Do you use any of the following social media sites/services as a way to share your research, to learn about others' research or teaching activities? **Select all that apply.**

- Facebook
- Google+
- Newswire
- Reddit
- Tumblr
- Twitter
- Other(s) (please specify)

- Not pertinent to my work

15. Do you actively participate in any social research, scholarly, or career networks? **Select all that apply.**

- ResearchGate
- Academia.edu
- LinkedIn
- SSRN
- ArXiv
- Other(s) (please specify)

- Not pertinent to my work

ANALYSIS

16. What tools/sites do you use to analyze data/texts etc.? **Select all that apply.**

- R
- SPSS
- Matlab
- Excel
- iPython
- ROpenSci
- DHbox

- Other(s) (please specify)

- Not pertinent to my work

17. What tools/sites do you use to share notebooks / protocols / research workflows? **Select all that apply.**

- Open Lab Notebooks
- myExperiment
- BenchLink
- Protocols.oj
- Benchfly
- Other(s) (please specify)

- Not pertinent to my work

WRITING

18. What tools/sites do you use to write / prepare your manuscript? **Select all that apply.**

- Word
- Google
- Authorea
- LaTeX
- Scrivener
- Overleaf
- Scalar
- Other(s) (Please specify)

19. Which tools/sites do you use for reference or citation management? **Select all that apply.**

- Connotea
- EndNote
- Mendeley
- RefWorks
- Zotero
- Papers
- RefMe

- Citavi
- Other(s) (please specify)

20. What types of research or teaching outputs do you produce? Select all that apply.

- Abstracts
- Articles
- Audio
- Books
- Book chapters
- Code
- Course Notes
- Presentations
- Data
- Images
- Learning objects
- Textbooks
- Papers
- Podcasts
- Posters
- Reports
- Peer Reviews for Journals
- Peer Reviews for Books
- Software
- Video
- Webinars
- Other(s) (please specify)

OUTREACH & DISSEMINATION

21. Have you archived or preserved any of your research or teaching outputs using the following tools?

- Personal scholarly website YES or NO
- Departmental website YES or NO

What types of research outputs do you maintain on the above site(s)?

22. Have you archived or preserved any of your research or teaching outputs using the following discipline-based / institutional repository? Select all that apply.

- UVicSpace (UVic's institutional repository)
- arXiv.org
- BioRxiv
- CiteSeerX (computer & information science)
- CogPrints (cognitive sciences preprints)
- Hprints (arts & humanities preprints)
- Humanities Commons
- LawArXiv
- PhilSci-Archive (philosophy of science)
- PubMed
- RePEc (Research Papers in Economics)
- ScientificCommons
- SSRN (Social Science Research Network)
- Other(s) (please specify)

- Not pertinent to my work

23. Images: Do you use any social photograph or image sharing services to disseminate your research/ teaching outputs? Select all that apply.

- Facebook
- Flickr
- Instagram
- Kodak Gallery
- Pinterest
- Snapfish
- Wikimedia Commons
- Other(s) (please specify)

- Not pertinent to my work

24. Slides: Do you use any social slide-sharing services to disseminate your research/ teaching outputs? Select all that apply.

- SlideBook
- SlideRocket
- SlideServe
- SlideShare
- Speaker Deck

- Other(s) (please specify)

- Not pertinent to my work

25. Videos: Do you use any video-sharing services to disseminate your research/ teaching outputs?

Select all that apply.

- Facebook
- iTunesU
- ScienceStage
- Vimeo
- YouTube
- Other(s) (please specify)

- Not pertinent to my work

26. Coding: Do you use or contribute to any social coding services?

- GitHub
- Other(s) (please specify)

- Not pertinent to my work

27. Data: Do you use or contribute to any open or social data sites to disseminate your research?

Select all that apply

- UVicSpace (Institutional Repository)
- GitHub
- Figshares
- Zenodo
- Dryad
- Dataverse
- Pangea
- BitBucket
- Other(s) (please specify)

- Not pertinent to my work

28. What tools/site do you use to tell others about your research/teaching activities outside academia? Select all that apply.

- Wikipedia
- Research Blogs
- Wordpress
- Kudos
- FameLab
- Pint of Science
- Twitter
- Facebook
- LinkedIn
- Other(s) (please specify)

29. What researcher profiles do you use? Select all that apply.

- Google Scholar
- ResearchGate
- Academia.edu
- ORCID
- ResearcherID
- My Science Work
- Other(s) (please specify)

- Not pertinent to my work

ASSESSMENT

30. What tools/sites do you use for peer review beyond that organized by traditional journals? Select all that apply.

- Peerage of Science
- Publons
- PubMed
- PubPeer
- PaperCritic
- Rubriq
- Other(s) (please specify)

- Not pertinent to my work

31. What tools/sites do you use to measure impact? Select all that apply.

- Journal Citation Reports
- Altmetric
- Scopus
- Impact Story
- PLOS One
- Web of Science
- Harzing.com
- Other(s) (please specify)

- Not pertinent to my work

A couple of final questions about your scholarly communication practices
32. Thinking about all of your online network profiles sites (e.g., Academia.edu, Research Gate, etc.) as a whole – but not on your UVic website profile – how useful do you find your network profiles for the following?

	Very useful	Quite useful	Not very useful	Not useful at all	I don't know
Raising your personal profile in the research community					
Raising the profile of your work in the research community					
Attracting funding					
Sharing authored content (e.g., papers, data sets, protocols, etc.)					
Attracting collaborators					
SS					
Raising the profile of your work in the research community at UVic					

33. Do you support the goals of any of the following Open Initiatives?

	Yes	No	I don't know
Open Access			
Open Data			
Open Education			
Open Science			
Open Government			
Open Source Software			
Open Licenses (e.g. Creative Commons)			

34. Please use the box below to share any other information about your scholarly communications practices and experience that is not covered above?

Please let me know if you would consider volunteering for the in-person interview phase of this study conducted by the principal researcher, Inba Kehoe. The interview will take approximately 45-60 minutes to complete. If you decide to participate, please enter your name and contact information. This information will be kept separately from the online survey.

Appendix E:

Participant Interview Invitation

Faculty Scholarly Communications and Publishing Practices and its Impact on Higher Education

You are invited to participate in a research study that examines the scholarly communications and publishing practices of faculty members at the University that is being conducted by Inba Kehoe, PhD candidate, Faculty of Graduate Studies.

Purpose: The traditional role of the university is to create, share, and disseminate research as widely as possible. The advent of the World Wide Web and ancillary advancements in technology have not only opened up scholarship for greater access, but created a transformation in the delivery channels that researchers use to disseminate their research (e.g., blogs, YouTube, social networks, Wikipedia, podcasts, etc.). My research attempts to examine faculty behaviour and practices in this new environment and its value proposition within higher education.

What is involved: Mixed methods will be used in the collection and analysis of data. Each semi-structured interview with participants will last approximately 45 – 60 minutes. Interviews conducted in-person or via web conferencing (BlueJeans) will be video/audio recorded, and used for transcription purposes only, then destroyed afterward. Should you choose an online interview, please be advised that this research study includes data storage in U.S.A. As such, there is a possibility that information about you that is gathered for this research study may be accessed without your knowledge or consent by the U.S. government, in compliance with the U.S. Freedom Act. This research and the dissemination of findings in a written dissertation will be completed within a year.

Voluntary Participation and On-going Consent: Participation in this research must be completely voluntary. Your decision whether or not to participate will in no way impact your relationship with any representative at the University. If you do decide to participate, you may choose to not answer questions and you may withdraw at any time without any consequences or any explanation. If you decide to withdraw, your data will be destroyed unless you give your permission otherwise. Data will be de-identified one month after the data collection is completed. Once de-identified data can no longer be

withdrawn. After the study your data will remain de-identified and will only be shared in aggregated and de-identified format. To make sure that you continue to consent to participate in this research, I will be applying the same confidentiality procedures outlined above for any future research related to this study.

Confidentiality: Your confidentiality will be guaranteed through the whole stage of the study, from data collection, coding, analysis to dissemination. All participants' responses will remain anonymous to protect participant confidentiality. As the principal investigator, I am the only one who will have access to your information. Data will be collected and stored on a Canadian server and will be kept secured in a password protected repository.

Risks and Benefits: There are no known or anticipated risks to you by participating in this research. There are no direct benefits to you for participating in this research. However, your input will be analyzed with that of other participants to add to the body of knowledge that can inform institutional practices related to tenure and promotion. Data collected will be used towards this research study and future related research conducted by the same researcher.

Compensation: Once my dissertation is completed, you will have access to my findings. As a way of compensating, you for time spent and any inconvenience related to your participation, you will be offered a \$10 UVic Bookstore gift card.

Dissemination of Results: It is anticipated that the results of this study will be shared with others in the following ways: published articles, dissertation presentation, website, and presentations at scholarly/library meetings, conferences or posters.

Disposal of Data: Data from this study will be disposed of ten years after the study is completed. The data will be held for ten years in case a changing landscape prompts the need to reexamine the findings, which may result in your being contacted again. During this time, the data may also be combined with other data and be used for future data analysis in collaboration with other researchers (e.g., graduate students, librarians, and faculty members) who sign a statement of confidentiality. After ten years, the digital audio files and transcripts will be deleted.

Contacts: As a graduate student, I am required to conduct research as part of the requirements for a PhD degree in Interdisciplinary Studies. Individuals that may be contacted regarding this study include: Inba Kehoe, Principal Researcher by email or you may contact my supervisors Dr. Valerie Irvine and Dr. Ray Siemens.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

Consent: By selecting “Yes” I indicate that I understand what is required based on reading the information provided above of this study and agree to participate. I understand the information that I provide is confidential and will be used for research purposes only and consent to the future use of my data as indicated above. I understand that my participation is voluntary and that I am free to withdraw at any time without penalty. If I have any concerns about my experience in this study, I may contact the Chair of the Human Research Ethics Board regarding my concerns.

- Yes, I agree to participate
- No, I decline to participate

Appendix F:

Participant Consent Form - Interview

Faculty Scholarly Communications and Publishing Practices and its Impact on Higher Education

You are invited to participate in a research study that examines the scholarly communications and publishing practices of faculty members at the University that is being conducted by Inba Kehoe, PhD candidate, with the Faculty of Graduate Studies. Inba is also the Copyright & Scholarly Communication Librarian at UVic Libraries.

Purpose and Objectives: The traditional role of the university is to create, share, and disseminate research as widely as possible. The advent of the World Wide Web and ancillary advancements in technology have not only opened up scholarship for greater access, but created a transformation in the delivery channels that researchers use to disseminate their research (e.g., blogs, YouTube, social networks, Wikipedia, podcasts, etc.). My research attempts to examine faculty behaviour and practices in this new environment and its value proposition within higher education.

What is involved: This semi-structured interview will take approximately 45-60 minutes. Interviews may be conducted in-person or via web conferencing (BlueJeans) will be video/audio recorded, and used for transcription purposes only, then destroyed afterward. Should you choose an online interview, please be advised that this research study includes data storage in U.S.A. As such, there is a possibility that information about you that is gathered for this research study may be accessed without your knowledge or consent by the U.S. government, in compliance with the U.S. Freedom Act. This research and the dissemination of findings in a written dissertation will be completed within a year.

Voluntary Participation and On-going Consent: Participation in this research must be completely voluntary. Your decision whether or not to participate will in no way impact your relationship with any representative at the University. If you do decide to participate, you may choose to not answer questions and you may withdraw at any time without any consequences or any explanation. If you decide to withdraw, your data will be destroyed unless you give your permission otherwise. Data will be

de-identified one month after the data collection is completed. Once de-identified data can no longer be withdrawn. After the study your data will remain de-identified and will only be shared in aggregated and de-identified format. To make sure that you continue to consent to participate in this research, I will be applying the same confidentiality procedures outlined above for any future research related to this study.

Confidentiality: Your confidentiality will be guaranteed through the whole stage of the study, from data collection, coding, analysis to dissemination. All participants' responses will remain anonymous to protect participant confidentiality. As the principal investigator, I am the only one who will have access to your information. Data will be collected and stored on a Canadian server and will be kept secured in a password protected repository.

Risks and Benefits: There are no known or anticipated risks to you by participating in this research. There are no direct benefits to you for participating in this research. However, your input will be analyzed with that of other participants to add to the body of knowledge that can inform institutional practices related to tenure and promotion. Data collected will be used towards this research study and future related research conducted by the same researcher.

Compensation: Once my dissertation is completed, you will have access to my findings. As a way of compensating, you for time spent and any inconvenience related to your participation, you will be offered a \$10 UVic Bookstore gift card.

Dissemination of Results: It is anticipated that the results of this study will be shared with others in the following ways: published articles, dissertation presentation, website, and presentations at scholarly/library meetings, conferences or posters.

Disposal of Data: Data from this study will be disposed of ten years after the study is completed. The data will be held for ten years in case a changing landscape prompts the need to reexamine the findings, which may result in your being contacted again. During this time, the data may also be combined with other data and be used for future data analysis in collaboration with other researchers (e.g., graduate students, librarians, and faculty members) who sign a statement of confidentiality. After ten years, the digital audio files and transcripts will be deleted.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken at the University require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. In addition, I would like

to inform you that I've collected university tenure and promotion documents and will be analyzing them in context with this study. This consent form is necessary for me to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

Please read the above information and then sign this form to certify that you approve the following:

- the interview will be audio or video recorded and used for transcription purpose only, then destroyed afterward,
- you will be sent the transcript and given the opportunity to correct any factual errors,
- the transcript of the interview will be analyzed by Inba Kehoe as the principal investigator,
- access to the interview transcript will be limited to Inba Kehoe,
- any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed,
- any variation of the conditions above will only occur with your further explicit approval.

Contact Information

This research has been reviewed and approved by University of Victoria's Research Ethics Board. If you have any further questions or concerns about this study, please contact:

Name of Researcher: Inba Kehoe

What if I have concerns about this research?

If you are worried about this research, or if you are concerned about how it is being conducted, Individuals that may be contacted regarding this study include: Inba Kehoe, Principal Researcher by email or you may contact my supervisors Dr. Valerie Irvine and Dr. Ray Siemens.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University.

Appendix G:
In-Person/VoiP Semi-Structured Interview Protocol
for Research and Teaching Faculty

Warm-up

1. What is your professorial rank and gender?
2. In which department is your primary university appointment?

Research / Teaching Practice

3. In recent years, there have been discussions in the literature about how technological advances have allowed faculty to share their research and teaching outputs.
 - What do you do with your research / teaching outputs?
 - What forms (e.g., articles, books, conference papers, podcasts, etc.) of scholarly communication/publications do you use / would you like to use to create and disseminate these results/outputs?
 - Do any of them include online platforms?
 - Tell me about your best/worst experiences using them
 - Are there risks involved? What can you do to minimize them
 - What criteria do you use when choosing a distribution channel or platform for publishing your research/teaching?
 - Have you made any of your publications available on an “open” basis?
 - If yes, what were intentions for doing so? What was your goal?
 - If no, why not?
 - How does your participation in online networks and publishing platforms relate to your professional position, discipline, and personal intentions?
 - How important is it to have easy access to scholarly materials or other types of digital content for your research?
 - What types of course materials do you ask your students to engage with in preparation for a class? (e.g., textbooks, scholarly articles, primary source materials, film, audio, etc.)
4. To what degree do you or your colleagues engage with the public?
 - How?
 - Why or why not (barriers/challenges)?
5. How are research and teaching faculty in your field likely to interact with each other’s work?
6. Does your department outline specific criteria you need as part of the tenure and review process?
 - What kind of language (criteria/indicators and where you publish) is used to describe research and teaching?
 - With new forms of digital production emerging, are faculty in your field re-evaluating what constitutes a research/teaching contribution for purposes of tenure and

promotion? Examples might include contribution of executable code on a collaborative project, designing a game in education, open textbook, assessment tools, a digital interactive model of a historic site, etc.

7. What metrics would be the most useful to measure the impact of your work?
 - How do you want to tell the story of your research/teaching impact?
 - Do you have questions about the impact of your work?

8. Are/Were you satisfied with the performance reviews that were conducted on your dossier by the department's tenure and promotion committee?
 - How well do the criteria set by your department match your scholarly / teaching practice?

If there is anything else that you would like to mention, please feel free to comment.

Appendix H:
Quotation Agreement

I also understand that my words may be quoted directly. With regards to being quoted, please initial next to any of the statements that you agree with:

	I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation.
	I agree to be quoted directly.
	I agree to be quoted directly if my name is not published and a made-up name (pseudonym) is used.
	I agree that the researcher may publish documents that contain quotations by me.

All or part of the content of your interview may be used:

- In a dissertation, academic papers, policy papers or news articles
- On a website and in other media that I may produce such as spoken presentations
- On other feedback events

By signing this form I agree that:

1. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;
2. The transcribed interview or extracts from it may be used as described above;
3. I have read the Information sheet;
4. I don't expect to receive any benefit or payment for my participation;
5. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;
6. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Printed Name & Date

Researcher's Signature & Date

Appendix I:

CRediT Taxonomy

Credit is a high-level contributor taxonomy, including 14 roles that can be used to describe roles typically played by contributors to scientific scholarly outputs. The following chart describes each contributor's role and contribution.

Contributor Role	Contribution
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims.
Data curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later re-use.
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyse or synthesize study data.
Funding acquisition	Acquisition of the financial support for the project leading to this publication.
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection.
Methodology	Development or design of methodology; creation of models.
Project administration	Management and coordination responsibility for the research activity planning and execution.
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools.

Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components.
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team.
Validation	Verification, whether as a part of the activity or separate, of the overall replication / reproducibility of results/experiments and other research outputs.
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/data presentation.
Writing-original draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation).
Writing-review & editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages.

The above taxonomy is not limited to traditional authorship roles or is intended to define what constitutes authorship. Recommendations for applying the CRediT taxonomy are:

- List all contributions – including those listed as authors or individuals listed in acknowledgements
- Multiple roles possible – individual contributors may be assigned multiple roles

- Degree of contribution option – for multiple individuals listed in same role, the degree of contribution can be listed as ‘lead,’ ‘equal,’ or ‘supporting.’
- Shared responsibility – corresponding authors assume responsibility for role assignment and all contributors are given opportunity to review and confirm assigned roles
- Make CRediT machine readable

Source: Consortia Advancing Standards in Research Administration, & National Information Standards Organization. (2014). *Contributor Roles Taxonomy (CRediT)*. Retrieved from <https://casrai.org/credit/>

Appendix J:

Matrix for OER in Tenure and Promotion Portfolio

ADOPT

Contribution	Evidence	Research Teaching Service	
Use OER in a class or classes		Yes	
Use open access research article	Provide evidence of the open access journal articles that were used in course outline	Yes	

ADAPT

Contribution	Evidence	Research Teaching Service	
Revise OER of others to be more relevant to student needs	Survey students in class to learn more about the impact the revised materials have had on their learning. A similar study was conducted in British Columbia.	Yes	Yes
Revise or remix OER to align with course learning outcomes	Provide evidence on what was revised or remixed to best suit the course learning outcomes. Survey students in class to learn about the impact the revised materials had on their learning.	Yes	

CREATE

Contribution	Evidence	Research Teaching Service	
Make new OER	When creating OER, make it available to peers for their review. Document their reviews and include them in your dossier. The following is a common rubric used to review open textbooks.	Yes	Yes

IMPROVE LEARNING

Contribution	Evidence	Research Teaching Service
Improve student outcomes	To best understand the improvement of student outcomes, increased student engagement, innovation and reduction in cost, survey students in your course. Review the survey and questions conducted in " A multi-institutional study of the impact of open textbook adoption on the learning outcomes of postsecondary students. "	Yes
Innovation		Yes
Increase student engagement		Yes
Reduce material costs to students		Yes

COMMUNITY

Contribution	Evidence	Research Teaching Service
Mentoring others in OER	Provide recommendation letters from mentorships and via the mentee.	Yes
OER leadership (change culture, policy change, lead an initiative)	Provide a list of committees and specific actions you took related to OER and committee work. For tasks led, describe the initiative, provide evidence of change and seek references and recommendations on the work completed.	Yes

Disseminate knowledge about OER	Provide list of workshops, webinars, presentations related to OER and Open Education advocacy			Yes
Peer review existing OER	Provide citations of the reviews conducted.		Yes	Yes

RESEARCH

Contribution	Evidence	Research	Teaching	Service
Scholarship of Teaching and Learning (SOTL) about OER	Provide citations and links to work completed related to SOTL and OER.	Yes	Yes	
Conference presentations	Provide citations, links, recordings and slides of the work done to disseminate OER knowledge.	Yes		Yes
Grant writing	Provide excerpts from grant proposals, including budgetary asks and narrative as to how the grant will benefit the department or institution.	Yes		Yes

Note. Developed by Driving OER Sustainability for Student Success (DOERS3) Collaborative. In McKinney, A., & Coolidge, A. (2021, March 2). *The DOERS3 Collaborative on OER in Tenure and Promotion*. <https://nebhe.org/journal/practitioner-perspectives-the-doers3-collaborative-on-oer-in-tenure-and-promotion/>. CC BY License.