Detailed Description
Objectives
This proposed research will explore how to improve more timely transfer of research outcomes and information more widely to the general public(s). In particular, it will examine how traditional curatorial practice, established in museums, can be integrated into a research process (an online case study) to enhance research dissemination and civic literacy on a critical social issue, biodiversity conservation. The research questions are: 1) How, and in what ways, can contemporary curatorial practices contribute to improved research dissemination? 2) How can a research curator contribute to greater outreach and diverse public engagement? 3) What role does research curation play in online dialogue and engagement? 4) What strategies or best practices for research curation apply to research dissemination and knowledge transfer? 5) How, and in what ways, can new research curation practices and dynamic shifts between different media channels enhance research dissemination and knowledge transfer?

Context
Curation within museums first emerged as a means of social reformation during the 19th century in England as a way for the upper classes to assign value and meaning to art and artefacts, and for working class visitors to learn, emulate, and subsequently assume the standards for public conduct (Bennet, 1995). Museum collections were assigned authoritarian value as social progress was often linked to the "materiality" of objects (Witcomb, 2003). This set the tone for the future as museums typically asserted their power over the collections they displayed and the knowledge they transferred. Over the last 25 years, museums have undergone a paradigmatic shift where curatorial programs no longer solely emphasize artefacts and the voice of the curator (Hooper-Greenhill, 1992). In the modern museum, visitors have shifted from passive learners to active participants who seek knowledge. This demand for accessibility to information has transformed curatorial processes, making them more open, collaborative and mindful of visitor experience (Hooper-Greenhill, 1992). Pekarik and Mogel (2010) argue that offering multiple points of entry whether through historic or scientific facts, material objects or stories of people, is key to engagement of wider audiences. This transformation mirrors the democratization of information and the demand for public access to culture in the 21st century (Reeve & Woolard, 2006). With the advent of online exhibitions and the use of social media, museums expanded their audiences to include digital visitors who now access and engage online. For example, the Rijksmuseum in Amsterdam developed Rijksstudio, an image-based website reminiscent of Pinterest featuring user-curated collections of artworks. Google Arts and Culture collaborated with thousands of museums to create an expansive database of collections from around the world, and UBC's Museum of Anthropology developed a series of online exhibitions in collaboration with the Virtual Museum of Canada detailing artifacts and anthropological findings. As a parallel to this transformative development, it is our belief that academic research ought to be mobilized online much in the same way. However, with the sheer volume of information circulating online everyday it is imperative that it be presented in a way that connects the audience to the researcher and engenders social learning and ideally action.

   Research curation (RC), for the purposes of this research, is conceived as a method to mobilize research quickly to broad audiences via dynamic online platforms. We believe the integration of new research curatorial practices and social media is critical for knowledge mobilization, as it establishes accessibility through enhanced context and provides additional social meaning to research outcomes by adopting elements of contemporary curatorial practice into the dissemination process. These elements include interpretive planning, visual storytelling, audience research and online communications designed to enhance civic literacy. RC also considers what connects users to knowledge by establishing multiple points of entry. Research is curated across social media platforms (Pinterest, Twitter, Facebook, and

YouTube), illustrated through data visualizations and videos, and reflected on in blog posts, and helps mobilize research as it is being produced on the ground, thereby shortening the time lag of the take-up of knowledge. Our objective is for this new practice to disseminate research further among diverse Canadians, enhance civic literacy around critical social issues, foster deeper connections to knowledge and bridge existing polarized debates leading to greater social learning.

A larger framework that shapes the curatorial trajectory of exhibition development in museums, applicable to our study, is interpretive planning. While this process was originally developed for informal learning-based institutions, including national parks and later museums, it can be adapted to the academic realm. As a roadmap for the thematic, interpretative and audience framework of an exhibition, it helps guide the organization, messaging, presentation and communication of information. This intentional, thoughtful and methodical process is intended to facilitate meaningful and effective learning experiences for visitors (Wells, Butler, & Koke, 2013). While the structure of this process varies according to project, it typically lays out the exhibition thesis, themes and context while framing audience objectives and communication plans in a concise document.

Exhibitions disseminate information via curated labels and text panels containing stories, narratives and facts. They serve to "explain, guide, question, inform or provoke" readers (Serrell, 1996, p. 10) while facilitating "communication between a knowledgeable guide and an interested listener" (1996, p. 11). They are also presented alongside media—including images, videos and digital interactives—to offer multiple avenues for viewers to access, interpret and ultimately engage with information. A third relevant curatorial method is audience research. As a key phase in the development of exhibitions and educational programming in museums, audience research helps uncover the needs and expectations of different groups while providing museums with a greater understanding of how they can effectively engage existing and new visitors. Conducting such research also provides curators and educators with insight, necessary for future planning, into the use of their museum (Hooper-Greenhill, 1994).

Content Curation—In marketing circles, content curation is defined simply as finding content that others have created and/or posted online, and reposting it to your own social media feeds, often with added annotation, commentary, or context (Kanter, 2011; Mullan, 2011; Gaasterland, 2011). For this method to work, with respect to getting noticed by an audience, it must provide a service to the audience, which strong content curation practices do. Content curation is successful when it: a) begins with an awareness of an audience or community and their interests; b) finds strong content which speaks directly to that audience or community; c) tags the content appropriately using signifiers such as hashtags; and d) adds value by providing additional insight or context to the content. The reason why this practice is so valuable is because of the vastness of the participatory web (Shirky, 2010). Since everyone can contribute content online, and many do, the result is a type of information overload. Content curation thus provides a valuable service insofar as it provides a filter for information that other people can rely on. In that sense, curating content is not dissimilar from the practice of creating online Personal Learning Networks (PLNs) using social media tools (Wolf et al., 2011). In each case, content is chosen and shared with a community with the hope of growing that community and sharing something of value. Wilkes and Hodson (2013) operationalized the practice of content aggregation and curation as a specific means of sourcing and distributing content on a trend or issue as a way to teach blended and online students how to conduct digital research. They used content aggregators to find content, and then social media platforms and blogs to curate or share that content. Taking the concept of curation out of the marketing sphere, and borrowing from the literature on PLN's, they showed how students could leverage content curation not only to share a message with a community, but to also conduct a type of research on that community. They recommended that content curation always be thought of as a moving

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target. In other words, one who is curating content must begin with an understanding of their target audience, but cannot also end there. Content curation is an iterative process, dialectic in nature , which relies on ongoing measurement of the performance of curated content, and adjustments where necessary to determine the direction of future posts (Wilkes & Hodson, 2013). If done correctly, and if content is appropriately tagged, curated posts can vastly outperform other types of content as the nature of folksonomic online tagging tends to follow a power-law distribution (Halpin, Robu & Shepherd, 2007).

Biological diversity, better known as biodiversity, is an intricate web of life composed of many varieties of living species and ecosystems driven by ecological systems (Environment and Climate Change Canada, 2011). According to the *2016 Living Planet Report* (WWF, 2016) 67% of wild animals will disappear by 2020. Human activity is now overpowering the planet, causing what many are calling the Anthropocene geological epoch (Rockstrom et al. 2009). Biodiversity conservation, therefore, is a critical imperative for the 21st century. This specific issue was chosen as the focus of this proposed research project because it typifies the messy, wicked problem (Paquet, 1989; Levin et al. 2012) that "defy complete definition and easy or complete solutions due to the inherent and constantly evolving complexity of the system at stake" (Moser et al. 2012, p. 52). It is also critical given the lack of literacy and consensus in Canada around the drivers and barriers we are facing in its resolution—it is beyond any one sector, any one discipline, any one government to solve (Dale, 2001).

Social learning can be defined as "a change in understanding that goes beyond the individual to become situated in wider social units or communities of practice through social interactions between actors within social networks" (Reed, Evely, Cundill, Fazey, Glass, Laing, Newig, Parrish, Prell, Raymond, & Stringer, 2010). The goal of social learning is to mobilize relevant and useful knowledge across networks in order to contribute to action that improves a situation. There are three defining features of social learning: i) a change in understanding or practice occurs; ii) learning extends beyond the individual; and iii) how, through which modes, networks and social relations, this learning is mobilized (Reed et al., 2010). Knowledge dissemination is foundational for social learning, and we would argue that proactive transfer of research outcomes, particularly interdisciplinary research, is critical. Similar to social movement theory, in social learning a 'cognitive praxis' forms around a common goal or outcome in order to mobilize behavior change and broader societal action. For social learning to occur, the ideas and attitudes of these participants (small group) must diffuse to members of the wider social units or communities of practice to which they belong (Reed et al., 2010). This praxis may occur at the individual scale, influenced by cognitive and affective conditions, but until this learning contributes to exchange and learning at a broader scale, it does not classify as social learning (Reed et al., 2010).

Processes of social learning are considered to be both drivers of innovation and outcomes (Yuen et al., 2011). Building response capacity among institutions, networks and actors is viewed as necessary to deal with complexity and uncertainty and to enhance adaptive capacity and adaptive management approaches through involvement of diverse knowledges and stakeholder practices in decision-making processes (Bos et al., 2012; Hume, 2012; Walter & Hollings, 1990). An outcome of social learning is to understand how learning scales from the niche or individual level to the landscape or regime level or across to broader social units (Reed et al. 2010; Rodela, 2011). With communications technology, the potential for this acceleration is significant and requires experimentation and considered reflection on the ways communities can learn from one another (Dale, 2005; Dale & Naylor, 2005; Dale & Newman, 2008). The shift to web-based technologies presents the opportunity to disseminate information and knowledge easier, faster and with greater extent. This generates networks of exchange and learning that can build capacity and prevent the isolation innovators may face in taking innovative action alone. Much

of this knowledge is contextually dependent but some may be transferable.

Online environments can also help to build human and intellectual capital (understood as knowledge, wisdom, experiences, skills and capacity) by increasing access to 'outside' expertise by communities that ordinarily would not have such access, through forums independent of place and ability to pay for that expertise to travel. In fundamental ways, dialogue differs from consensus building, agenda setting or consultation, since it provides a more sustained, engaged, open-ended and inclusive modality of shared decision-making with the public. Renewed work on deepening civic engagement (McCoy et al., 2002), the recent identification of a 'democratic deficit,' along with the general recognition that 'something's wrong somewhere', suggest that these asymmetries are real. Complex developments over the last twenty years, particularly widespread dissatisfaction with electoral politics and policy development (see Citizens' Forum on Canada's Future, Theme Report, 1991), have pointed to the need for the state to include and account for an increasingly diverse society that wants 'in'− to play a greater role in decisions once thought to be the sole prerogative of the state (Dale, 2001).

Methodology and Methods

This project will be guided by a case study methodology, and will use mixed methods – qualitative and quantitative. We will experiment with museum methodology by applying it to the taxonomy and content plan of our research website and social media channels. The project will also examine how exhibit label writing methodologies and their interpretive approach can be applied to web writing and its effect in transferring knowledge online. We will study how this is applicable to social media and website content curation to help determine how academic researchers can engage digital communities, effectively disseminate information and continually re-evaluate their curatorial approach.

Biodiversity Case Study—A series of virtual online conversations will be used as a case study to answer the research questions about the efficacy and effectiveness of research curation. Anecdotal evidence suggests public awareness and literacy regarding biodiversity is at the same stage of public awareness as sustainable development was in the late 1980s. Over 18 months, virtual online real-time e-Dialogues will be moderated by the PI exploring what biodiversity is, why it is important to conserve, what the drivers and barriers are to its conservation, what the solutions are and what steps need to be taken if Canada is serious about acting now. Expert panels will be convened including researchers from across the country, practitioners, NGO leaders and policy-makers. The e-panels will be accompanied by e-audiences who use a live chat feature to ask questions of the e-panelists at the end of their discussion. Following each conversation, it will be published and open to the public.

A sample of people (1/3) from the e-audience will receive surveys before and after each e-dialogue via survey software. Following the completion of the conversation series, we will conduct a series of open-ended, semi-structured interviews with a sub-sample of the e-audience. The qualitative and quantitative data we intend to uncover will address the following: a) audience demographics; b) how participants heard about our e-Dialogue event (social media, e-blast, website, friend/colleague, university, etc.; c) their reason for attending/joining; d) what they found engaging and compelling; e) what they suggest needs re-evaluation or adjustment; f) which subjects interested them the most and least; g) whether or not the e-Dialogue changed their opinion on the subject; h) whether or not they will take action on the ground. The information collected will help us determine what worked and what didn't work regarding our communication strategy, objectively (survey) and subjectively (interviews), and inform any future adjustments we make. It will also enrich our ongoing audience research since we are predominately measuring engagement online through quantitative analytics. Our interview and survey data findings will be used to develop research curation best practices.

A digital engagement strategy will be developed using the Digital Engagement Framework, a

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downloadable tool which was originally developed for use in the culture, heritage and arts sectors. It was created to help institutions, such as museums, to "design the strategies, processes and technologies" needed to sustainably engage their audiences online through dialogue and knowledge sharing (Visser and Richardson, 2013, p. 6). The framework brings together elements of communications, marketing, audience development and new media strategies to establish a specialized engagement strategy (Visser and Richardson, 2013). In applying the most relevant elements of this methodology to our work, our goal is to uncover best practices in digital engagement that can be used by the research community.

To understand the reach of our posts better, we will employ tools such as netlytic.org (Gruzd, 2016) and the leading digital market research tool Sysomos (Cheng, Evans and Singh, 2009). These tools will allow us to scrape data from such social media platforms as Instagram, Twitter, and Facebook, and conduct a network analysis of conversations between users, to see whether opportunities exist to curate research in such a way that it reaches beyond the walls of online echo chambers (Hodson and Dale, in press). This approach will help us curate content according to the desires and needs of our online publics, adjusting performance when we see something is working, and pivoting when less effective.

Social media will be a primary tool used study the impact of integrating curatorial practices into a research process. It offers dynamic and fast-paced communication channels that are ideal for sharing research in real time. Because research concepts must be broken-down into easy to read posts, it forces users to communicate their knowledge in different ways. For example, research can be presented in various forms (of media)—including images, videos and interactive data visualizations. These enable users to communicate their work through different lenses, which is particularly important on social media as some users are naturally drawn to image-based posts, others prefer text-based dialogue, while some prefer learning through videos. Social media is also often successful when sharing content from websites, specifically from blogs. They feed Twitter and Facebook with content while inviting readers to delve deeper into real-time reflections, research processes and discoveries. By using different types of social media to circulate our academic research, we open an otherwise exclusive arena to include a far-reaching audience.

Another key methodological approach to determine the efficacy and effectiveness of research curation will be to collect, measure and analyze the performance of our social media accounts in mobilizing our research—including Facebook, Twitter, Pinterest and YouTube. Using analytics tools built-in to our social media accounts, our students will collect metrics capturing a variety of data pertaining to our level of online engagement. This data will help us measure our reach (the number of people who see our content), our impressions (the number of times our content is displayed) and our level of engagement (the number of interactions people have with our content). These types of analytics will help us determine the following: 1) our most compelling content; 2) the number of retweets, shares, likes and comments; 3) user demographics; 4) the best times of the day to post content; 5) most effective forms of content (i.e. text, image, video or gif-based); and 6) number of clicks leading to our websites.

We will also use Buffer, a social media management tool, to not only track metrics but also efficiently curate and mobilize our research. This tool will enable our team of graduate students to post directly to our social media channels while capturing real-time analytics via reports measuring the in-depth performance of our social media profiles. One metric type that will be invaluable is data that traces most clicked and least clicked posts. Another tool that will be used to track our online metrics is Google Analytics. Embedded in our CRC Research website, this tool provides in-depth data on user demographics, user trends and user navigational behaviour through websites. Downloadable reports can be created through customizable filters. These tools will reveal what resonates most with our audience and help us determine how to best curate our research on our website and across social media.

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